**DETERMINANTS AND CONSEQUENCES OF ORGANIZATIONAL JUSTICE
CLIMATE IN THE U.S. FEDERAL GOVERNMENT: AN ORGANIZATIONAL LEVEL,
LONGITUDINAL STUDY**

By

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(Under the Direction of Robert K. Christensen)

ABSTRACT

The purpose of this study is to explore how organizational attributes shape justice climate and how organizational justice climate influences a variety of work-related outcomes over time in U.S. federal government agencies.

In the continuing quest to understand public employees' reactions to fair (or unfair) treatment in the workplace, researchers to date have conceptualized organizational justice as an individual-level phenomenon. Beyond individual-level fairness perceptions, however, recent research in business management has begun to conceptualize justice climate as an organizational-level construct representing employees' collective perceptions of the quality of their treatment by the organization and supervisors. This aggregate-level concept assumes that employees interact with one another, transmit their experiences on work unit treatment, and engage in convergent sense-making about how to assess justice-triggering events. Based on this

view, researchers have been accumulating impressive evidence about the determinants and consequences of justice climate at the organizational level.

Despite these scholarly achievements on the topic, few studies have explored how organizational attributes affect the four dimensions of justice climate (distributive, procedural, informational, and interpersonal justice climate) and what the outcomes of justice climate in public organizations are. This omission may be problematic in that an individual-level approach fails to account for social and structural factors that shape shared justice perceptions and the effects of justice climate on organizationally relevant outcomes.

To fill these gaps in the public administration literature, the current study examines the effects of two organizational attributes (collective supervisory trust and perceptions of decentralized structure) on the four dimensions of justice climate and the effects of the justice climates on organizational level outcomes (work attitudes, subjective performance, and turnover) using five waves of the federal government survey and personnel data files (2010-2014). Findings suggest that collective supervisory trust and perceptions of decentralized structure are powerful predictors of the four dimensions of organizational justice climates—distributive, procedural, informational, and interpersonal. Furthermore, collective supervisory trust has more influence on procedural, informational, and interpersonal, whereas perceptions of decentralized structure have more influence on distributive justice climate. Findings also indicate that the four dimensions of justice climates have positive relationships with work attitudes (job satisfaction and affective commitment) and subjective organizational performance (work quality and mission achievement), but negative relationships with turnover (turnover intention and turnover behavior). Interestingly, procedural justice climate is positively related to both turnover intention

and behavior that is counterintuitive. Moreover, findings show relative influence of the four dimensions of organizational justice climate on the organizational-level outcomes.

As a result, this study contributes to extending current scholarship regarding organizational justice literature in public administration by shedding light on justice climate formation and the effects of justice climate on a variety of organizational outcomes over time across an entire federal subagency level.

INDEX WORDS: Organizational justice climate, Supervisory trust, Decentralized structure, Work attitudes, Subjective organizational performance, Turnover

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DEDICATION

This dissertation is dedicated to my family, for their unconditional love. Without their

encouragement, devotion, and discipline, it would have been impossible for me to realize all of

my academic achievements.

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INTRODUCTION

Research Background

Over the past three decades, organizational justice has proven to be one of the most popular research areas in organizational behavior (Cropanzano, Rupp, Mohler, & Schminke, 2001; Liao & Rupp, 2005). Organizational justice is concerned with employees' perceptions of fairness in the workplace (Aryee, Budhwar, & Chen, 2002; Colquitt, 2001; Cropanzano & Stein, 2009). Given that fair treatment substantially affects work-related outcomes, researchers have devoted much attention to the process of justice perception formation and employees' reactions to fairness at the individual level (Ambrose, 2002; Cropanzano, Byrne, Bobocel, & Rupp, 2001).

For instance, recognizing that employees' sense of justice is partially a product of organizational context (e.g., leadership and organizational structure), some scholars have examined the effect of various organizational attributes on justice perception formation (Roberson & Colquitt, 2005; Schminke, Cropanzano, & Rupp, 2002). In addition, a growing number of organizational justice studies have shown that employees' perceptions of fairness in the workplace lead to a wide range of work-related outcomes (Blader & Tyler, 2005; Cohen-Charash & Spector, 2001; Colquitt, Conlon, Wesson, Porter, & Ng, 2001). These outcomes include job attitudes (e.g., organizational outcomes, job involvement, trust in management, and job satisfaction), emotional reactions (e.g., depression and anger), and behaviors (e.g., turnover, performance, and organizational citizenship behavior).

More recently, scholars in business management have turned their attention from an

individual approach toward organizational justice to a shared perception of justice at the

organizational level. Admittedly, justice research conducted at the individual level has

contributed significantly to theoretical development by explaining how individuals make fairness

judgments and how such perceptions of justice lead to outcomes in the workplace (Liao & Rupp,

2005). However, an individualistic approach may fail to take into account the social context in

which perceptions of fairness form and result in higher-level outcomes (Mossholder, Bennett,

Kemery, & Wesolowski, 1998; Naumann & Bennett, 2000). Individuals do not exist in a vacuum

(Barsky, Kaplan, & Beal, 2011); instead, others within their work group continuously affect their

perceptions (Li & Cropanzano, 2009). This is a particularly interesting line of inquiry that

examines how social experiences and interactions within units lead to unit-level cognitions of

organizational justice (also known as justice climate). In this respect, the study of justice climate

suggests that members of a work unit develop a collective sense of fairness by sharing

information and experience on justice-triggering events (Li & Cropanzano, 2009; Roberson,

2006a, 2006b; Walumbwa, Hartnell, & Oke, 2010).[1] In response to the great need for a collective

approach, business management scholars have recently examined the effects of organization-

level fairness perceptions on organization-level outcomes (Colquitt, Noe, & Jackson, 2002;

Roberson, 2006a).

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[1] It should be noted that organizational climate and organizational culture are distinct phenomena. Organizational climate refers to "shared perceptions of organizational policies, practices, and procedures, both formal and informal" (Reichers & Schneider, 1990, p. 22). In other words, climate is considered as employees' common perceptions created by sharing their experiences and feelings about structural characteristics of an organization. In contrast, organizational culture is defined as "the coherent pattern of beliefs and values that represent acceptable solutions to major organizational problems" (Zahra, Hayton, & Salvato, 2004, p. 365). To be specific, organizational culture is employees' shared cognitive perspective regarding what to do and how to act in the organization.

Because fairness has been perceived as a crucial value for effective organizational management, organizational justice is not only a central topic in the business management field (Cropanzano, Stein, & Nadisic, 2011), but also an increasingly important theme in public administration. What do we know about organizational justice in the public sector?

Although most organizational justice research is concentrated on private organizations (Cho & Sai, 2012), public administration scholars have, in fact, been dealing with fairness issues in the public sector for the past decade. Indeed, a growing body of public management research has reported that employees' perceptions of organizational justice increase trust in management, job satisfaction, and cooperation, and decrease turnover intention, counterproductive work behavior, and the filing of complaints (Cho & Sai, 2012; Choi, 2011; Choi & Rainey, 2014; Hassan, 2013; Rubin, 2009; Rubin & Kellough, 2012). Similarly, research on a pay for performance system has indicated that equitable distribution of rewards and fair administration of performance appraisals are key tasks in public sector human resource management to increase employees' intrinsic motivation and job engagement (S. E. Kim & Rubianty, 2011; Meng & Wu, 2015). Furthermore, public administration researchers have recently asserted that citizens' perceptions of fair treatment by government authorities are strong predictors of civic engagement, social capital, trust in civil servants, and satisfaction with governmental decisions (Herian, Hamm, Tomkins, & Zillig, 2012; Van Ryzin, 2011). A lack of understanding about the formation of justice judgments and employees' reactions to unfair treatment leaves public managers without guidance about what kinds of policies and activities bolster the perceptions of organizational justice.

Although the justice research conducted in public administration is important, several questions remain when it comes to exploring the impact of organizational attributes on justice

judgment formation and linking these perceptions to various outcomes at the organizational level. Fairness perceptions within a unit are interdependently constructed when the members share a similar interpretation of justice-related events (Li & Cropanzano, 2009; Simons & Roberson, 2003; Spell & Arnold, 2007). Thus, it is important to examine the relationships between organizational attributes and collective perceptions of justice, as well as how the justice climate shapes work-relevant outcomes beyond those accounted for by individual justice perceptions. The dynamics underlying justice climate effects are more powerful when all or most of the unit members have been treated fairly (Naumann & Bennett, 2000; Yang, Mossholder, & Peng, 2007).

Following this line of reasoning the longitudinal, organizational- level research in this dissertation examines how organizational attributes shapes justice climate in the federal government agencies. In addition, this dissertation investigates the impact of justice climate on work attitudes and behaviors over time at the federal agency level.

Brief Review of Justice Research in Public Administration

Although there is relatively little literature regarding organizational justice in public administration compared to that in the business management field, considerable scholarly attention recently has been paid to the potential outcomes of fair treatment in public organizations. Table 1 summarizes previous studies on the effect of organizational justice on outcomes that have been published in a core set of public administration journals.[2]

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[2] I examined all articles published in a core set of 10 public administration journals since 1990, whose title contain the word organizational "justice" or "fairness." This included 1) *Journal of Public Administration Research and Theory*, 2) *Administration & Society*, 3) *Public Personnel Management*, 4) *Review of Public Personnel Administration*, 5) *International Public Management Journal*, 6) *American Review of Public Administration*, 7) *Public Administration Review*, 8) *Public Performance and Management Review*, 9) *Public Administration*, and 10) *Public Management Review*. However, I did not consider books, book reviews, or book chapters.

Drawing on debate about the different organizational structures in public versus private organizations, Kurland and Egan (1999) compared two perceptions of fairness—distributive and procedural justice—between public and private employees. They assumed that public employees would have higher levels of procedural justice than of distributive justice because public organizations are more formalized and less performance-reward linked than their private counterparts are. The findings revealed that public employees have lower levels of both justice perceptions compared with private employees. They concluded that bureaucratic pathologies in the public sector, including elusive pay-performance links and red tape, lead employees to develop weaker justice perceptions.

After the initial study on justice perceptions conducted by Kurland and Egan (1999), the key issue is whether fair treatment from management results in positive work-related outcomes. Indeed, a number of public administration scholars provided considerable evidence that employees' justice perceptions have a positive impact on job attitudes and behaviors. Rubin (2009), for instance, reported that procedural justice in federal government is a powerful predictor of increased trust, job satisfaction, and intention to remain in the current organization. Using survey data from public employees of local governments, Hassan (2013) also found that distributive and procedural justice are positively associated with organizational identification and job involvement, and negatively associated with turnover intention.

With respect to justice perceptions-work behaviors relations, De Schrijver, Delbeke, Maesschalck, and Pleysier (2010) found that, in the local government context of Belgium, public employees who have high levels of overall fairness perceptions are less likely to engage in organizational misbehavior such as corruption, improper use of authority, or fraud than those with lower perceived overall fairness. In addition, Chen and Jin (2014) recently examined the

relationships between three dimensions of organizational justice and organizational citizenship behavior (OCB) and found that distributive, procedural, and interpersonal justice are strong predictors of employees' OCB.

In summary, justice studies in public administration have notably advanced theoretical and practical understanding of organizational justice at the level of the individual employee in the public sector. Overall, fairness is a primary concern for public employees (Cho & Sai, 2012). Evidence of its importance can be seen in a growing body of research showing that perceived justice has positive effects on job satisfaction, trust, job involvement, and organizational identification, while injustice has negative effects on intention to remain, productive work behavior, and cooperation. This literature contributed valuable information to help public managers and organizations develop managerial practices and policies that enhance employees' fairness perceptions. In the next section, I generate research questions for this dissertation based on gaps revealed by this review of existing studies.

Research Justification

Despite the recognized importance of organizational justice in the field of public administration, notable gaps remain in the literature on this subject. First, research is lacking that links the differential effect of each type of organizational justice to organizational outcomes. Researchers generally agree that organizational justice perception is a multifaceted concept (Colquitt, Greenberg, & Zapata-Phelan, 2005). A justice-related event involves distributive justice (perceived fairness of outcome distributions), procedural justice (perceived fairness of the process by which decisions are made), informational justice (the amount and quality of information provided concerning procedures and outcomes), and interpersonal justice (the

quality of personal treatment the individual receives from others). Research has suggested that individuals tend to evaluate at least four aspects of their work environment and share justice perceptions about their organization and their own authority (Colquitt, 2001; Cropanzano, Bowen, & Gilliland, 2007). Despite the fact that organizational justice theorists have proposed four discriminant dimensions of organizational justice, most of the previous research in public administration has examined the impact of only two or three of the dimensions—and even then, only the impact on employee work attitudes. As such, we do not yet know which justice dimensions could be related to organizational outcomes or how different dimensions of justice affect different types of work attitudes and behaviors.

Second, so far researchers have paid scant attention to the relationship between organizational attributes and perceptions of justice in public administration. Theoretical work has suggested that various organizational attributes may influence how justice is perceived in an organization (Schminke, Ambrose, & Cropanzano, 2000). The fundamental tenet of this work is that individuals' sense of justice in the workplace is shaped by organizational structures and the exchange relationships with supervisors (Ambrose & Schminke, 2003). For example, decentralized structures that allow employee participation in the decision-making process and offer empowerment lead employees to perceive that the organization is trying to treat them fairly. It is possible that employees will enhance their perceived justice when the organization provides an opportunity for them to express their opinions in the decision-making process and job discretion. In addition to a decentralized structure, trust in leadership is considered a strong predictor of employees' justice perceptions. According to fairness heuristic theory, employees are often in social dilemmas where they have to cooperate with coworkers and supervisors to accomplish goals, but at the same time, they are concerned that they might be exploited by others

because they lack information about whether they are being fairly treated. The theory argues that supervisory trust offers assurance to subordinates that their supervisors are behaving in accordance with fair procedures and are considering their best interests, and thus promotes perceptions of organizational justice. Despite the intuitive appeal of these ideas, there has been no evidence to demonstrate whether organizational context has any influence on perceptions of fairness in public administration. Thus, it is eminently worth knowing what organizational attributes influence justice perceptions and how public organizations are structured to promote justice.

Third, most public administration researchers have focused primarily on the effects of individual-level justice perceptions on individual-level outcomes. That is to say, scholars have paid little attention to unit-level cognition regarding how a work unit as a whole is treated. In a study of collective perceptions of justice climates, Konovsky (2000) noted that "almost wholly absent from consideration has been the influence of higher-order factors on procedural justice including culture and organization or group-level procedural justice antecedents and consequences" (p. 504). Moreover, Lind, Kray, and Thompson (1998) pointed out that "most of the potential information about the fairness of any given authority or institution lies in collective, not personal, experience" (p. 19). These justice scholars consistently call for research on justice climate as a unit-level organizational justice. Organizational climate has been a central theme of not only general management studies, but also public management research. Indeed, scholars found that public employees' shared perceptions of their work environment are strong predictors of organizational outcomes at the organizational level (Destler, 2014; Hassan & Rohrbaugh, 2012; Hunt & Ivergard, 2007; Vashdi, Vigoda-Gadot, & Shlomi, 2013). In light of this, it is important to examine whether organizational justice climate matters in the public sector.

Finally, most organizational justice studies in public administration use a cross-sectional research design that examines variation across cases at a single moment in order to determine the relationship between perceived justice and employee work attitudes. However, building on the important role of time in measuring key constructs of organizational behaviors (Geroge & Jones, 2000), some scholars from business management and psychology have recently focused on change in employees' justice perceptions (Ambrose & Cropanzano, 2003; Colquitt & Rodell, 2011; Truxillo, Bauer, Campion, & Paronto, 2002). Holtz and Harold (2009), for instance, examined supervisory justice perceptions over three points in time and found that there is significant variability over time of justice perceptions within-person and between-persons. Similarly, Hausknecht, Sturman, and Roberson (2011) argued that employees alter their fairness perceptions over time as they acquire additional information regarding allocation procedures and decision-making. In a longitudinal investigation, they revealed that changes in procedural fairness perceptions influence employee job attitudes more strongly than any other justice perceptions. To sum up, given that employee justice perceptions vary over time, the longitudinal designs of this study will lead to stronger conclusions about causality.

Research Questions

Recognizing these limitations of existing justice research in the field of public administration, this dissertation intends to answer the following research questions:

> **1. How do organizational attributes (supervisory trust and perceptions of decentralized structure) impact the four dimensions of organizational justice climate? (see Chapter 3 and 6).**
>
> **2. How do the four dimensions of organizational justice climate impact work attitudes (job satisfaction and affective organizational commitment), subjective organizational performance (work quality and mission achievement), and turnover (turnover intention and turnover behavior)? (see Chapter 4 and 7).**

The two research questions are addressed together because their practical implications are complementary. As indicated by the first research question, organizational characteristics may influence the organizational justice climate at the agency level because fairness perceptions are embedded within organizational systems (Greenberg, 1993; Schminke et al., 2000). Answering the second research question demonstrates the relationships between organizational justice climate and the consequences. Clearly, if each justice climate type has different effects on the consequences (the second questions) then the practical implications depend on the role played by organizational attributes in determining shared perceptions of fairness at the federal agency level (the first question).

Dissertation Structure and Outline

This study is organized into eight chapters. Chapter 2 describes conceptualizations of organizational justice at the individual level and the organizational level. Chapter 3 explores predictors that determine the level of organizational justice climate in the context of public organizations (see research questions, #1). In chapter 4, I discuss the effects of organizational justice climate on the aggregate level of work-related attitudes (i.e., job satisfaction and affective organizational commitment), perceived organizational performance (i.e., work quality and mission achievement, and turnover (i.e., turnover intention and behavior) (see research questions, #2). In chapter 5, I provide a description of data and measures of main variables. The unit of analysis for all parts of the study is the federal subagency, and all variables are examined at the organizational level. While chapter 6 reports the analysis of the relationships between organizational attributes and justice climate, chapter 7 reports the analysis of the relationships

between justice climate and organizational consequences. Finally, chapter 8 provides a

discussion of the results and suggestions that can help to guide future research. For the readers'

convenience, figure 1displays the conceptual model that underlies literature review and analysis.

Figure 1: Conceptual Framework: Hypothesized Linkages

Figure 1: Conceptual Framework: Hypothesized Linkages

-Research Question 1-
Determinants of Organizational Justice Climate

-Research Question 2-
Consequences of Organizational Justice Climate

Chapter 2

Supervisory Trust

Perceptions of Decentralized Structure

+

+

Organizational Justice Climate

1. Distributive Justice Climate
2. Procedural Justice Climate
3. Informational Justice Climate

+

+

−

Work Attitudes
1. Job Satisfaction
2. Affective Commitment

Subjective Organizational Performance
1. Work Quality
2. Mission Achievement

Turnover
1. Turnover Intention
2. Turnover Behavior

Chapter 3 & 6

Chapter 4 & 7

Table 1. Summary of Previous Studies on Organizational Justice in Public Administration

Author(s)	Independent Variables	Dependent Variables	Data	Unit of Analysis	Method
Kurland & Egan (1999)	Public and private sector employees	-Distributive justice -Procedural justice	Survey of public and private employees in a national telecommuting trade association	Individual	Cross-sectional
Rubin (2009)	-Procedural justice	-Trust -Job satisfaction -Turnover intention	The 2002 Federal Human Capital Survey (responses from DOD employees only)	Individual	Cross-sectional
Noblet & Rodwell (2009)	-Distributive justice -Procedural justice -Informational justice -Interpersonal justice	-Job satisfaction -Well being	Australian Government Survey	Individual	Cross-sectional
Schrijver et al. (2010)	-Organizational fairness	-Organizational misbehavior	Flemish government survey in Dutch	Individual	Cross-sectional
Choi (2011)	-Distributive justice -Procedural justice -Interpersonal justice	-Job satisfaction -Trust in supervisor -Trust in management -Intention to leave	The 2005 Merit Principles Survey	Individual	Cross-sectional
Rubin (2011)	-Procedural justice	-Member of union	The 2005 Merit Principles Survey	Individual	Cross-sectional
Kim & Rubianty (2011)	-Distributive justice -Procedural justice -Interactional justice	-Intrinsic motivation	The 2005 Merit Principles Survey	individual	Cross-sectional
Cho & Sai (2012)	-Distributive justice -Procedural justice -Informational justice	-Career development -Employee satisfaction -Loyalty to senior leadership -Cooperation	The 2008 Federal Human Capital Survey	Individual	Cross-sectional
Hassan (2012)	-Distributive justice	-Organizational identification	-Local Government	Individual	Cross-

			Survey in the U.S.		sectional
	-Procedural justice	-Job involvement -Turnover intention			
Meng & Wu (2012)	-Distributive justice -Procedural justice	-LMX -Job engagement	Public school survey in China	Individual	Cross-sectional
Rubin & Kellough (2012)	-Procedural justice	-Employee complaint rates	The 2005 Merit Principles Survey	Agency	Cross-sectional
Herian et al. (2012)	-Information about the use of deliberative public participation procedures	-Procedural justice (Mediator) -General evaluations of city government -Support for its use of tax dollars	Survey of local government employees	Individual	Cross-sectional
Choi & Rainey (2013)	-Organizational fairness	-Job satisfaction	2006 Federal Human Capital Survey	Individual	Cross-sectional
Ko & Hur (2013)	-Procedural justice	-Job satisfaction -Turnover intention	2008 Federal Human Capital Survey	Individual	Cross-sectional
Chen & Jin (2014)	-Distributive justice -Procedural justice -Informational justice -Interpersonal justice	-Organizational citizenship behavior	Survey of employees in private and state-owned companies, China	Individual	Cross-sectional
Rubin & Weinberg (2014)	-Implementation of National Security Personnel System -Employee type	-Procedural justice	2002-2012 Federal Human Capital Survey	Agency (Navy, Agriculture, Interior, & Treasury)	Longitudinal (Difference in means)
Rubin & Chiqués (2015)	-Procedural justice	-Union membership	2005 Merit Principles Survey	Individual	Cross-sectional

CHAPTER 2

THE DEFINITION AND STRUCTURE OF ORGANIZATIONA JUSTICE CLIMATE

Traditionally, organizational justice is considered to consist of three distinct dimensions: (1) distributive justice (the fairness of outcomes), (2) procedural justice (the fairness of procedures used to determine outcomes), and (3) interactional justice (the fairness of interpersonal communication and treatment received from the authority figures) (Colquitt, 2001; Colquitt & Greenberg, 2003; Cropanzano et al., 2007). However, in recent years, there has been growing acceptance that interactional justice is better captured by two sub-factors— informational justice (the extent to which an individual is provided with adequate and sufficient information about workplace decisions) and interpersonal justice (the extent to which an individual is treated with respect and dignity) (Crawshaw, Cropanzano, Bell, & Nadisic, 2013; Folger & Cropanzano, 1998; Greenberg, 1993). In this section, I conceptualize each justice dimension and categorize them into two independent classes, including source of justice judgment and context of justice judgment (justice climate).

Organizational Justice at the Individual-Level

Distributive Justice

As the first sub-dimension, distributive justice refers to the perceived fairness of one's outcomes from an organization or decision-making system (Byrne & Cropanzano, 2001; Crawshaw et al., 2013; Folger & Cropanzano, 1998). Equity theory was a major breakthrough

that has stimulated considerable research on the fairness of outcome distributions in the workplace (Griffeth & Gaertner, 2001). The crux of equity theory is that individuals inherently calculate mentally an input/outcome comparison (Colquitt et al., 2005). Specifically, employees in the workplace compare their extrinsic rewards (e.g., pay, promotion, and bonus) and investments (e.g., effort, intelligence, and performance) to those received by someone else who has a similar job (Scott & Colquitt, 2007). If the ratio between inputs and outcomes matches the relationship between inputs and outcomes of the referent person, then an employee perceives equity (Cropanzano & Greenberg, 1997). In contrast, if an employee discovers a discrepancy between his or her input/output ratio and the ratio of some compared other, he or she perceives the outcome distribution as unfair. As a result, the theory predicts that employees who feel that outcome distributions are unfair attempt to restore balance to the ratio of input and output of rewards by modifying their inputs (Spector & Fox, 2002).

However, it should be noted that some researchers have pointed out critical issues in applying equity to distributive justice (Fiske, 1992; Lerner, Somers, Reid, Chiriboga, & Tierney, 1991). First, the definitions of inputs and outcomes are subjective and often controversial (Pritchard, 1969). For example, people may disagree about what results in a contribution as input and how much of a contribution others are making in comparison. Second, the theory is more likely to predict reactions to working conditions where employees are under-rewarded than in working conditions where they are over-rewarded (Bolino & Turnley, 2008). Third, Adams (1965) focused primarily on equity perceptions (i.e., individuals should receive rewards in proportion to their inputs or contributions), thus neglecting other types of values that might influence outcome allocations, such as equality and individual needs (Bolino & Turnley, 2008; Fiske, 1992).

Although interest in the equity theory has recently subsided in the field of organizational behavior research (Byrne & Cropanzano, 2001), it still serves as a theoretical foundation to understand how people struggle for fairness and justice in occupational settings. Justice researchers posited that equity theory contributed to understanding employee work motivation, and provided a framework to analyze issues of justice in the workplace (Colquitt et al., 2005; Cropanzano & Randall, 1995).

Procedural Justice

The second sub-dimension of organizational justice is procedural justice, which concerns the fairness of the allocation decisions by which outcomes are assigned (Cropanzano & Stein, 2009). Although distributive justice was a central theme of justice research in the 1960s and 1970s, justice scholars began to pay considerable attention to procedural justice in the 1980s (Colquitt et al., 2005). Researchers posited that individuals might be affected not only by how much they receive, but also by how the distribution procedures are made (Leventhal, 1976, 1980; Thibaut & Walker, 1975). Equity theory, in fact, due to ignorance of procedural fairness, offers no clear way to predict the individuals' reactions. Procedural justice theory suggests that outcome favorability is less vital in work conditions where the allocation process is fair, because employees have a strong belief that such fair decision procedures will satisfy their needs in the future (Hosmer & Kiewitz, 2005). Thus, individuals could express different reactions to unfairness in one situation or another depending on the perception of procedural justice (Cropanzano & Randall, 1995).

For instance, Thibaut and Walker (1975), in their pioneering work of procedural justice, argued that individuals are willing to accept unfavorable outcomes as long as they are allowed to retain process control. In laboratory studies, Thibaut and Walker examined two types of legal

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dispute resolution systems to understand different reactions by disputants in two forms of legal proceedings: (1) adversary procedures in the U.S. and Great Britain and (2) the inquisitorial procedures in continental European countries. Asking two disputants about their justice perceptions of a third-party decision maker in their legal systems, the adversary proceeding was considered much fairer than the inquisitorial proceeding. This finding implies that individuals perceive dispute procedures as fair and accept the results if they have sufficient opportunity to make their voice heard during the process stage. Subsequently, Leventhal (1976) asserted that individuals use various criteria to assess decision-making procedures in order to judge whether the procedures are fair or unfair. He postulated specific procedural rules for fair procedures: consistency (consistent procedures across time and persons), bias suppression (the exclusion of self-interest), accuracy (the provision of accurate information), correctability (allowing for appeals and grievances), representiveness (the basic concern of all individuals being represented), and ethicality (moral and ethical standards). Allocation procedures that satisfy these criteria persuade individuals to believe that they are fairly treated by the organization.

Interactional Justice

Instead of the formally institutionalized structures for allocation and dispute resolution systems, recent justice research has focused on the quality of the interpersonal treatment received from authority figures (Hosmer & Kiewitz, 2005). Though procedural justice researchers emphasized decision-making procedures as critical factors affecting the formation of justice perceptions, they paid scant attention to social aspects of the workplace (Colquitt et al., 2005). The fundamental tenet of interactional justice research is that individuals make justice appraisals based on these less formalized aspects of interaction between two participants (Folger & Cropanzano, 1998).

Bies and Moag (1986) stressed the importance of four elements—truthfulness, respect, justification, and propriety—governing the fairness of interactional treatment. Asking job candidates how recruiters should treat job applicants, they found that truthfulness is the most important attribute for interactional justice. It suggests that to improve interactional justice authorities should be open and candid in their communication during decision-making procedures. In their study, any sort of deception, in contrast, aggravates unfairness perceptions by job candidates. While individuals are distrustful of overly favorable "honeyed words" from recruiters, they do expect organizations to provide accurate and realistic information about working conditions. Furthermore, individuals expect to be treated with courtesy, dignity and respect in social exchange relationships. Drawing on the concept of interactional justice suggested by Bies and Moag (1986). Greenberg (1993) separated the social aspect of justice into two distinct types: informational justice and interpersonal justice. Informational justice is defined as providing accurate information in timely communications, being transparent in communication, and providing reasonable explanations for events at work (S. Masterson, Byrne, & Mao, 2005). Interpersonal justice is shaped by interpersonal experience of being treated with respect and politeness by authorities (Kernan & Hanges, 2002). Greenberg (1993) argued that justice should be recognized as conceptually distinct. He posited that informational justice reflects the social aspects of procedural justice because it offers information about decision-making procedures that demonstrate regard for employees' concerns. In contrast, interpersonal justice involves social aspects of distributive justice in the sense that it is concerned with expressions of remorse for the outcomes themselves.

Indeed, empirical research on interactional justice found that employees have higher perceptions of fairness when organizations provide reasonable explanations for decisions and are

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truthful in communicating about procedures (Brockner, DeWitt, Grover, & Reed, 1990; Colquitt, 2001; Greenberg, 1990). In addition, as in much of the work that examined the quality of social exchanges between subordinates and authorities, justice scholars revealed that honesty, integrity, and listening to a subordinate's concerns about outcome allocations are generally identified as characteristics of interpersonal justice (Colquitt, 2001; Skarlicki & Folger, 1997). Overall, though interactional justice was initially considered as a single justice dimension (Bies & Moag, 1986), most research in recent years has treated informational and interpersonal justice separately because of their different predictors and unique effects on work behaviors (Colquitt, 2001; Scott, Colquitt, & Zapata-Phelan, 2007).

Summary and Conclusion

Considering all these issues, justice research has shifted from a single justice dimension (distributive justice) to four justice dimensions (distributive, procedural, informational, and interpersonal justice). According to Greenberg (1993), the four dimensions of organizational justice can be categorized by two independent criteria: source of justice judgment (system-referenced and supervisor-referenced) and content of justice judgment (outcome-focused and process-focused). Specifically, the concept of distributive justice focuses on individuals' expectations of a fair distribution of economic outcomes (outcome-focused) while procedural justice is concerned with the fairness of decision-making procedures or rules (process-focused). With respect to the source of justice perceptions, both distributive and procedural justice is accomplished through organizational systems (system-referenced). On the other hand, the two dimensions of interactional justice—informational and interpersonal justice—are formed by the quality of interpersonal treatment received at the hands of authority figures such as supervisors (supervisor-referenced). Informational justice is close to the concepts of the social aspect of

procedural justice (process-focused), whereas interpersonal justice is close to the concepts of the social aspect of distributive justice (outcome-focused).

The conceptual distinctions based on source and context of justice judgment may provide benefits in exploring the separate effects of each dimension. For instance, justice researchers may fail to contribute to theoretical development if they ignore differences between social and structural factors of individuals' decision processes (Gilliland, Steiner, & Skarlicki, 2001). In a similar vein, although individuals' concern about economic and relational needs in exchange relationships at the workplace may reflect conceptual distinctiveness, by incorporating them into the rubric of single constructs, it is difficult for researchers to find valuable insights (Colquitt & Shaw, 2005). Therefore, distinct concepts of organizational justice eventually expand our understanding regarding how people form justice judgments and why they exhibit different emotional and behavioral reactions to experiences of unfair treatment. Figure 2 provides taxonomy of four justice dimensions at the individual level depending on the sources and content of employee fairness judgments.

Organizational Justice at the Organizational-Level

Beyond justice perception judgments at the individual level, researchers have argued that individuals within a work unit may share a sense of the fairness of their organization and their supervisor (Colquitt et al., 2002; Moliner, Martínez-Tur, Peiró, Ramos, & Cropanzano, 2005; Mossholder, Bennett, & Martin, 1998). Because the fairness perceptions are formulated socially through collective understanding about events, policies, and practices that occur in organizational settings, it is a natural progression for scholars to turn their attention from examinations of perceived justice at the individual level of analysis to examinations of justice at

the organizational level (Whitman, Caleo, Carpenter, Horner, & Bernerth, 2012). These collective perceptions that a group has been treated fairly have come to be known as an organizational justice climate (Li, Cropanzano, & Bagger, 2013; Walumbwa, Avolio, & Zhu, 2008). In this section, I provide the key ideas and concepts of organizational justice climates.

The fundamental tenet of individual justice perceptions is that individuals form justice judgments through a rational calculation regarding their treatment in workplace exchanges and allocations, and then they react in an emotional and behavioral manner. Although scholarly justice research at the individual level has contributed significantly to theoretical development by explaining how individuals make fairness judgments and how such justice perceptions lead to workplace outcomes (Liao & Rupp, 2005), an individualistic approach may fail to fully take into account the social context within which fairness perceptions are formed (Li & Cropanzano, 2009; Mossholder, Bennett, & Martin, 1998; Whitman et al., 2012). As noted by Kozlowski and Klein (2000, p. 15), "Many phenomena in organizations have their theoretical foundation in the cognition, affect, behavior, and characteristics of individuals, which—through social interaction, exchange, and amplification—have emergent properties that manifest at higher levels." That is to say, justice perceptions are not formed in isolation but rather in the context of specific relationships with multiple individuals and groups.

Two theories provide the background of organizational justice climate research: social information processing (SIP) theory and the attraction-selection-attrition (ASA) model. SIP theory asserts that employee attitudes and behaviors are the results of active interaction with each other that formulate a sense of managerial practices and events in their workplace (Salancik & Pfeffer, 1978). This theory suggests that individuals are adaptive organisms and, as such, adapt their beliefs and behaviors based on information collected from the social environment (Weiss &

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Nowicki, 1981). For instance, Roberson (2006a, 2006b) conducted two laboratory experiments to examine the results in certain groups of the convergence of member justice perceptions. The results showed that the social construction of justice occurred when unit members shared information about why certain procedures were used to distribute outcomes, and exchanged interpretations of fairness-related events. These results suggest that organizational climates are products of social exchanges at work and that they advance and grow through said social exchanges. Thus, SIP theory offers the theoretical underpinnings of justice climate research, and focuses on shared norms and collective behaviors among employees regarding the four dimensions of organizational justice, as defined above (Li & Cropanzano, 2009).

The attraction-selection-attrition (ASA) model also serves as a foundation for organizational justice climate. The model posits that groups or organizations become homogeneous entities of individuals, integrating their personalities, attitudes, and beliefs through three sets of processes (Schneider & Reichers, 1983; Schneider, White, & Paul, 1998). First, the ASA framework proposes that individuals are more likely to be attracted to organizations with which they share similar perceptions. Second, organizational authorities are prone to select applicants with similar characteristics. Finally, individuals who differ from other organizational members are expected to leave either voluntarily or involuntarily, as they do not harmonize with the other members. Hence, members of the same organization exhibit a strong homogeneity in their values, attitudes, and personality (Schneider, Goldstiein, & Smith, 1995). For example, Naumann and Bennett (2000) applied the ASA model to examine the development of justice climates. It was found that team members have high levels of agreement with justice-related events, as they are likely to have demographic similarities and work group cohesion.

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Overall, both general models—social information processing theory and attraction-selection-attribution—provide theoretical explanations for the development of justice climate research. More specifically, individuals' fairness perceptions may be learned and transferred from others and facilitate not only within-group homogeneity but also between-group differences. Building on the theories of organizational climate, scholars have distinguished four facets of justice climate: 1) distributive justice climate (shared fairness perceptions of rewards); 2) procedural justice climate (shared fairness perceptions of organizational procedures); 3) informational justice (shared fairness perceptions of the credibility and adequacy of information given to employees); and 4) interpersonal justice climate (shared fairness perceptions of the respect and courtesy that employees receive from their authorities) (Li & Cropanzano, 2009; Liao & Rupp, 2005; Spell & Arnold, 2007). In parallel to Figure 1 describing the taxonomy of four justice dimensions at the individual level, Figure 3 offers a taxonomy of justice climate which is created by cross-cutting the sources and content of employees' shared fairness perceptions.

Figure 2. Taxonomy of Organizational Justice Classes at the Individual Level (adapted from Greenberg 1993, p. 83)

	Source of Justice Judgment	
	System-referenced (i.e., non-interactional dimensions)	Supervisor-referenced (i.e., interactional dimensions)
Outcome-Focused	**Distributive Justice** (i.e., perceived fairness of outcome distributions)	**Interpersonal Justice** (i.e., the quality of personal treatment the individual receives from others)
Process-Focused	**Procedural Justice** (i.e., perceived fairness of the process by which decisions are made)	**Informational Justice** (i.e., the amount and quality of information provided concerning procedures and outcomes

Content of Justice Judgment

Figure 3. Taxonomy of Organizational Justice Climate Classes at the Organizational Level (transition from individual to organizational level)

		Source of Justice Climate	
		System-referenced (i.e., non-interactional dimensions)	Supervisor-referenced (i.e., interactional dimensions)
Content of Justice Climate	Outcome-Focused	**Distributive Justice Climate** (i.e., aggregated perceptions of distributive justice at the individual level)	**Interpersonal Justice Climate** (i.e., aggregated perceptions of interpersonal justice at the individual level)
	Process-Focused	**Procedural Justice Climate** (i.e., aggregated perceptions of procedural justice at the individual level)	**Informational Justice Climate** (i.e., aggregated perceptions of informational justice at the individual level)

CHAPTER 3

EXAMINING THE CONTEXTUAL FACTORS - JUSTICE CLIMATE RELATIONS

Introduction

Given the positive relationships between organizational justice and outcomes, researchers have begun to recognize the importance of various attributes of organizations in forming perceptions of justice. For example, Ambrose and Schminke (2003) have emphasized that researchers need to investigate the determinants of organizational justice to enhance their understanding of what contributes to perceptions of fairness in organizational settings. In addition, Cohen-Charash and Spector (2001), in their meta-analysis, found that few studies on the antecedent for forming perceptions of justice. More recently, some researchers have argued for the need to investigate various organizational characteristics that may shape justice perceptions at both individual and organizational levels (Folger & Skarlicki, 2001; S. Masterson et al., 2005; Patient & Skarlicki, 2005; Phillips, 2002; Scott, Colquitt, & Paddock, 2009).

A number of studies have answered the call to study determinants of organizational justice by examining its contextual factors. First, one stream of research that focused on individual differences found that a wide range of attitudinal and personality variables influence individual justice perceptions (Barsky et al., 2011; Colquitt, Scott, Judge, & Shaw, 2006; Crawshaw et al., 2013; De Cremer, 2005). Second, another stream of research proposed that cultural differences across countries and organizations influenced justice perceptions. Sufficient empirical evidence reveals that team-oriented cultures promoting harmony and cooperation

enhance organizational justice perceptions by satisfying employees' desire for social identification with valued working groups (Elovainio, Kivimäki, & Vahtera, 2002; Erdogan, Liden, & Kraimer, 2006). Finally, researchers reported that various organizational structures including centralization, formalization and organizational size affect perceptions of fairness (M. C. Andrews & Kacmar, 2001; Schminke et al., 2002; Zhang & Agarwal, 2009).

Although there is a volume of literature on the positive effects of justice perceptions on work-related outcomes in public administration (Cho & Sai, 2012; Choi, 2011; De Schrijver et al., 2010; Hassan, 2013; S. E. Kim & Rubianty, 2011; Noblet & Rodwell, 2009; Rubin, 2009; Rubin & Kellough, 2012), little scholarly effort has been invested in the role of contextual factors in determining justice judgment formation. Furthermore, the considerable justice research in the field of business management has paid little attention to the relative magnitudes of contextual factors in predicting justice perceptions. Drawing from a multifoci model, focusing on source-specific perceptions, employees' justice formation process often depends on their exchange partners (e.g., organization and supervisors) who treat them. If the justice begets beneficial effects on the organization, these omissions may lead to a lack in understanding how to create a working environment to promote public employees' fairness perceptions.

To fill these gaps, this chapter explores critical questions that have largely been ignored in justice literature: are certain contextual factors related to organizational justice climate in federal government; what are the relative effects of the contextual factors on the four dimensions of justice climate? Based on the two sources of justice climate judgment—organization and supervisors (Greenberg, 1993), I chose perceptions of decentralized structures that is perceived as an organization-based source and supervisory trust that is perceived as a supervisor-based

source. In the next section, I provide the theoretical frameworks and present hypotheses of the two organizational attributes and their impacts.

Collective Supervisory Trust and Justice Climate

The conventional wisdom on the justice-trust relationship is that four dimensions of organizational justice perceptions influence trust in management (Colquitt & Rodell, 2011). Indeed, most public administration research has shown that organizational justice is a significant predictor of increasing employees' level of trust in or loyalty to their managers (Cho & Sai, 2012; Choi, 2011; Rubin, 2009). In contrast to this perspective, some researchers have posited that the reverse relationship is also true (Alexander & Ruderman, 1987; Colquitt & Rodell, 2011; Kickul, Gundry, & Posig, 2005; Konovsky & Pugh, 1994; Lind & Tyler, 1992; van den Bos, 2001). Specifically, the rationale of these studies is that supervisory trust is essential in the long-term for fair outcomes to be valued, such that trust serves as a surrogate for employees' justice perceptions (Lewicki, Wiethoff, & Tomlinson, 2005).

One theory that is relevant in this regard is the fairness heuristic theory (FHT). FHT argues that individuals experience a fundamental social dilemma where "they must cede to authority, and ceding authority to another person provides an opportunity to be exploited" (Cropanzano, Byrne, et al., 2001, p. 169). In other words, individuals identify with decision-makers that they would like to follow, but this hierarchical and dependent situation may expose them to high levels of exploitation (loss of outcomes) and exclusion (loss of social identity) (Lind et al., 1998). Because of the possibility of being exploited and excluded, they are often uncertain about important relationships with decision-makers and groups (Cropanzano, Byrne, et al., 2001; van den Bos, 2001). This uncertainty leads individuals to ask questions, such as

whether the decision-makers can be trusted or if others threaten a social identity in groups (De

Cremer & Tyler, 2005; Lind et al., 1998). Van den Bos, Lind, and Wilke (2001) described this

cognitive stage as a pre-formation phase where individuals struggle to reduce the many

uncertainties by collecting information about the trustworthiness of the authority (Rupp, 2011;

Van den Bos, Vermunt, & Wilke, 1997). FHT further provides the post-formation phase where

once fairness judgments are formulated, whether based on distributive, procedural, or interaction

justice, individuals are resistant to changing or revising the existing judgment in response to

subsequent fairness-relevant information (Lind et al., 1998; Van den Bos et al., 1997). That is,

such post-experience and initial fairness evaluations influence not only reactions to later events

about fair treatment but also the formation of ensuing fairness judgments (Cropanzano, Byrne, et

al., 2001).

Researchers have provided considerable evidence supporting the conclusion that

employees' trust in supervisors positively influences varying forms of justice perceptions. As in

the earlier study, Tyler (1994) found that employees' trust in leadership forms judgments of

procedural and distributive justice through strengthening the cognitive belief that managerial

authorities deliver fairness in the end. As a result, employees are more likely to accept

unfavorable outcomes and decisions when there are high levels of supervisory trust. Along

similar lines, two previous studies of business salespeople reported that trust in marketing

managers is a strong predictor of perceived justice (Brashear, Manolis, & Brooks, 2005; Rosier,

Morgan, & Cadogan, 2010). To be specific, high levels of trust allow employees to believe that

the policies and practices of managers are in accordance with appropriate norms and consider

employees' best interests (Lind & Tyler, 1988). Trust in leaders or decision makers, therefore,

play a role in enhancing faith that, even if outcome distribution and procedures are not in line

with employees' interests in a short term, fairness eventually will be delivered in the long term (Konovsky & Pugh, 1994; Lewicki et al., 2005; Rosier et al., 2010). In addition to the positive impact of trust on distributive and procedural justice, (Kickul et al., 2005) found that organizational trust also enhances perceived interactional justice. This result suggests that employees perceive trust as a surrogate for interactional justice, in which they are not exploited or excluded from interpersonal treatment.

In summary, individuals form fairness judgments by daily appraisal of justice-related information. This suggests that the fairness heuristic is used to guide subsequent decisions and behavioral strategies in our daily lives to match the level of fairness individuals perceive (Lind, 2001; Lind et al., 1998). According to FHT, employees collect information about the trustworthiness of supervisors to reduce the uncertainty resulting from the fundamental social dilemma (i.e., benefit vs. exploitation). That is, supervisory trust plays a significant role in the process of fairness judgment formation. In fact, considerable empirical evidence showed that employees are more likely to rely on trust in management when they are uncertain about whether or not the organization treats them fairly. I expect that the positive impact of trust on the formation of justice judgments would also emerge in organizational settings such that shared supervisory trust increases the organizational justice climate. Accordingly, the following hypotheses are proposed:

> H1a: Collective supervisory trust will be positively associated with distributive justice climate.
>
> H1b: Collective supervisory trust will be positively associated with procedural justice climate.
>
> H1c: Collective supervisory trust will be positively associated with informational justice climate.

H1d: Collective supervisory trust will be positively associated with interpersonal justice climate.

Collective Perceptions of Decentralized Structure and Justice Climate

Centralization is defined as "the extent to which authority is retained at the top of a hierarchy versus being distributed to multiple sub-units" (Jacobson, Rubin, & Donahue, 2008, p. 15). Put differently, a high degree of centralization in the organization indicates that important decisions are made at the top management level (Pleshko & Nickerson, 2008). According to Hage and Aiken (1967), there are two sub-components of centralization: participation of organization members in decision-making and hierarchy of authority. While participation in decision-making refers to the degree to which employees are able to participate in organizational policy making, hierarchy of authority refers to the degree to which employees are able to influence decisions regarding their task without interruption from supervision (R. Andrews, Boyne, Law, & Walker, 2009). Thus, centralized structure reflects low levels of participation in decision-making and high levels of hierarchy of authority. On the opposite end of the structural continuum, decentralized structure reflects high levels of participation in decision-making and low levels of hierarchy of authority.How does organizational structure influence employees' sense of justice? Since greater employee participation allows greater influence on organizational decision making, and less hierarchy authority allows greater autonomy in deciding how to perform their job responsibilities, then distributive and procedural justice should increase with each (Schminke et al., 2002). In addition, a centralized structure characterized by rigid authority allows the top of the hierarchical ladder to place less value on employee dignity and honesty, thereby leading to a decrease in interactional justice perceptions (Schminke et al., 2000).

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Consistent with this rationale, many studies indeed have provided mounting evidence that centralization has a negative impact on perceptions of justice. For instance, Schminke et al. (2002) investigated the relationships between justice perceptions—distributive, procedural, and interactional justice—and the two components of centralization. They predicted that participation in decision-making and authority of hierarchy would negatively influence employees' justice judgment. As they expected, the results indicated that participation is positively related to perceived distributive and procedural justice, whereas authority hierarchy is negatively related to perceived distributive, procedural, and interactional justice. In a similar vein, Zhang and Agarwal (2009), using a Chinese sample, provided empirical evidence of the positive impact of employee empowerment on distributive justice. It is plausible that empowered employees are likely to have a sense of control over the decision-making outcomes or processes, which strengthens justice perceptions. Ramaswami and Singh (2003) also reported that employees' participation in the goal-setting processes led to enhanced procedural and interactional justice perception (Thibaut & Walker, 1975; Tyler, 1994). These findings suggest that the opportunities to participate in decision-making support employees' belief that supervisors and the organization value their needs of self-respect, thus, participation positively influences interactional justice perception (Tyler, 1989).

Taken together, organizational centralization or decentralization plays a role in determining the formation of justice judgment. In fact, a body of empirical studies showed that less centralized organization (i.e., higher levels of participation and lower levels of authority hierarchy) reinforces employees' perception of distributive, procedural, and interactional justice, thus enhancing the influence of the justice judgments on rewards received from the organization and supervisors. However, surprisingly little attention has been paid to the relationship between

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decentralization (or centralization) and justice perception in the public sector. Building on the

central tenet of climate research, aggregated perceptions of decentralized power could influence

shared perceptions of organizational justice in the federal government. Accordingly, I propose

that:

H2a: Collective perceptions of decentralized structure will be positively associated with distributive justice climate.

H2b: Collective perceptions of decentralized structure will be positively associated with procedural justice climate.

H2c: Collective perceptions of decentralized structure will be positively associated with informational justice climate.

H2d: Collective perceptions of decentralized structure will be positively associated with interpersonal justice climate.

Multifoci Model: Focusing on the Two Sources of Justice (i.e., System and Supervisor)

Justice researchers have recently adopted a multifoci model, in which multiple parties

with whom employees have exchange relationships are considered as a source of judgment

formation (Lavelle, McMahan, & Harris, 2009; Liao & Rupp, 2005; Rupp & Cropanzano, 2002).

The foci could be supervisors, organizations, peers, customers, and other parties. According to

Rupp, Bashshur, and Liao (2007), employees distinguish between treatment they receive from

different parties and develop reactions toward the sources, accordingly (Li & Cropanzano, 2009).

Therefore, ignoring specifying the source of the fair treatment in justice measures may lead to

spurious results or produce effects of organizational context on the perceptions of justice that are

difficult to interpret. The conceptual distinctions based on source and context of justice judgment,

discussed in Chapter 2, provide useful frameworks within which to examine the relative

influence of supervisory trust and perceptions of decentralization on the formation of justice climate (see figure 4).

For instance, distributive and procedural justice could be conceptualized as system-referenced justice (non-interactional dimensions) because organizations generally distribute rewards and establish formal policies (Olkkonen & Lipponen, 2006). In contrast, supervisors are the most likely source of interactional justice perceptions in that employees make fairness judgments depending on how they are treated, interpersonally, by their supervisors (interactional dimensions) (Spell, Bezrukova, Haar, & Spell, 2011). For example, Malatesta and Byrne (1997), in their early research testing the ideas of multifoci approach, focused on two dimensions of justice: procedural and interactional. They posited that organizations are the crucial source of procedural justice in that they generally establish managerial practices and procedures. On the contrary, supervisors are likely to be perceived as the salient sources of interactional justice because they are mainly involved in administering interpersonal treatment. The empirical evidence of their study supported these hypotheses.

In summary, source-based justice perceptions about organizations and supervisors may lead to better predictions of justice judgment formation at an organizational level of analysis (Liao & Rupp, 2005). Specifically, recognizing that the interactional justice climate (i.e., informational and interpersonal) is concerned with evaluations regarding fair treatment by authorities, employees' collective trust in their supervisors is a stronger predictor of boosting two supervisor-referenced justice climates - informational and interpersonal - when compared to system-referenced justice climates - distributive and procedural (Kickul et al., 2005). In contrast, shared perceptions of decentralized organizational structure, including participation in decision making and empowerment, have a stronger impact on system-referenced justice climates (i.e.,

distributive and procedural) when compared to the supervisor-referenced justice climates. In light of this, the following hypotheses will be examined:

> H3:   Collective supervisor trust will be more strongly associated with supervisor-referenced justice climates (i.e., informational and interpersonal) than system-referenced justice climates (i.e., distributive and procedural).

> H4:   Collective perceptions of decentralized structure will be more strongly associated with system-referenced justice climates (i.e., distributive and procedural) than supervisor-referenced justice climates (i.e., informational and interpersonal).

Summary and Conclusion

This chapter addresses a gap in the existing literature on the link between contextual factors and the four types of organizational justice climate. Given the two sources of justice - organization and supervisor (Colquitt & Shaw, 2005; Greenberg, 1993), this study proposes that aggregated supervisory trust and perceived decentralization are key predictors of shared justice perceptions in federal government. In addition to the direction of relationships, this study investigates the relative efficacy of the two contextual factors on the four dimensions of organizational justice climate.

First, drawing from FHT, the literature suggests that supervisor trust drives justice judgments by reducing subordinates' uncertainty about whether they are exploited by others. To be specific, because employees are often unsure about whether or not they are fairly treated (Qin, Ren, Zhang, & Johnson, 2015), supervisory trust provides them with assurance that their supervisors act in accordance with moral norms and care about their best interests (Brashear et al., 2005). Second, systemically fair organizations are characterized by a decentralized structure.

Participation in decision-making and empowerment practice enhance assurances that employees will receive the rewards they deserve (Schminke et al., 2000; Schminke et al., 2002; Zhang & Agarwal, 2009). Third, drawing from the source-based justice perceptions of the multifoci approach, organizational attributes have varying effects on the four types of organizational justice climate. That is, supervisory trust is more influential for informational and interpersonal justice climate, whereas perceived decentralization is more prominent for distributive and procedural justice climate.

In summary, this chapter extends current public administration scholarship on the issue of organizational justice by exploring how various contextual factors influence collective perceptions of fairness in federal government. Given that employees' sense of justice is partially a product of work environments (Ambrose & Schminke, 2003; Greenberg, 1990), identifying the factors that contribute to organizational justice climate could offer additional insight into the area of organizational justice in public administration. Table 2 provides all hypotheses of this chapter.

Figure 4. Conceptual Framework of Multifoci Model: Focusing on the Two Sources of Justice (i.e., system and supervisor)

	Source of Justice Climate	
	System-referenced *(Non-interactional dimensions)*	**Supervisor-referenced** *(Interactional dimensions)*
Outcome-Focused	**Distributive Justice Climate** (i.e., aggregated perceptions of distributive justice at the individual level)	**Interpersonal Justice Climate** (i.e., aggregated perceptions of interpersonal justice at the individual level)
Process-Focused	**Procedural Justice Climate** (i.e., aggregated perceptions of procedural justice at the individual level)	**Informational Justice Climate** (i.e., aggregated perceptions of informational justice at the individual level)

Content of Justice Climate

Table 2. Summary of Hypotheses

	Collective Supervisory Trust and Justice Climate
H1a:	Collective supervisory trust will be positively associated with distributive justice climate.
H1b:	Collective supervisory trust will be positively associated with procedural justice climate.
H1c:	Collective supervisory trust will be positively associated with informational justice climate.
H1d:	Collective supervisory trust will be positively associated with interpersonal justice climate.

	Collective Perceptions of Decentralized Structure and Justice Climate
H2a:	Collective perceptions of decentralized structure will be positively associated with distributive justice climate.
H2b:	Collective perceptions of decentralized structure will be positively associated with procedural justice climate.
H2c:	Collective perceptions of decentralized structure will be positively associated with informational justice climate.
H2d:	Collective perceptions of decentralized structure will be positively associated with interpersonal justice climate.

	Multifoci Model: Focusing on the Two Sources of Justice
H3:	Collective supervisor trust will be more strongly associated with supervisor-referenced justice climates (i.e., informational and interpersonal) than system-referenced justice climates (i.e., distributive and procedural).
H4:	Collective perceptions of decentralized structure will be more strongly associated with system-referenced justice climates (i.e., distributive and procedural) than supervisor-referenced justice climates (i.e., informational and interpersonal).

CHAPTER 4

EXAMINING THE JUSTICE CLIMATE - ORGANIZATIONAL OUTCOMES RELATIONS

Introduction

Looking back at more than a decade of research, public administration scholars have

accumulated impressive evidence attesting the important role of perceived organizational justice

as a powerful predictor of a wide range of work outcomes including, job satisfaction, trust in

management, turnover intention, discrimination, job involvement, and organizational

misbehavior (Cho & Sai, 2012; Choi, 2011; Choi & Rainey, 2014; De Schrijver et al., 2010;

Hassan, 2013; Rubin, 2009; Rubin & Kellough, 2012). This research notably contributes to

advancing theoretical and practical understanding of fairness at the level of the individual

employee. However, many justice scholars have asserted that this individual-level approach is

limited because it fails to consider fully the presence of collective justice perceptions in

organizations (Colquitt et al., 2002; Konovsky, 2000; Moliner et al., 2005; Priesemuth, Arnaud,

& Schminke, 2013; Roberson, 2006a, 2006b; Whitman et al., 2012). Hence, researchers have

begun to examine the relationships between shared organizational justice at the organizational

level and higher-level outcomes (Li & Cropanzano, 2009).

Social exchange theory (SET) has been widely used as a dominant lens to explain the

effect of justice perceptions on individual attitudes and behaviors (Colquitt et al., 2013). The

central tenet of the theory is that the norm of reciprocity inherent in social exchange relationships

encourages individuals to feel the need to repay the organization or supervisors who have helped them (Blau, 1964; Scott et al., 2007). Since fair treatment is the symbolic message behind showing employees goodwill gestures, fairness perceptions encourage them to reciprocate the treatment by exhibiting positive attitudes and behaviors (Whitman et al., 2012).

In addition to SET, for predicting the causal directions, a two-factor model of justice research emphasizes different main effects of the four dimensions of organizational justice. Based on the contents of justice judgment, the outcome-focused nature of two justice dimensions - distributive and interpersonal - are more influential on person-referenced outcomes, including job satisfaction, turnover intention, and turnover behavior. In contrast, the process-focused nature of two justice dimensions—procedural and informational—is more influential on system-referenced outcomes, such as affective organizational commitment and organizational performance.

Surprisingly, little research on public administration has been devoted to investigating the effects of organizational justice climate on work-related outcomes and their relative efficacy at the organizational level. This chapter seeks to fill these research gaps. Specifically, drawing from social exchange theory, I suggest that high levels of justice climate within an organization lead to an enhanced norm of reciprocity, improving the organizational-level outcomes. Based on the ideas of a two-factor model, I also propose the varying influence of the four dimensions of justice climate on the outcomes.

Social Exchange Theory

Social exchange theory has been considered one of the most influential mechanisms to explain how organizational justice perceptions influence work-related outcomes. According to (Blau, 1964, p. 91), social exchange is defined as "voluntary actions of individuals that are

motivated by the returns they are expected to bring and typically do in fact bring from others."

The theory assumes that individuals respond to others differently depending on the treatment they receive (Song, Tsui, & Law, 2008). The norm of reciprocity suggests that individuals tend to help those who have helped them because returning equivalent benefits is essential to maintain high quality exchange relationships (Blau, 1964; Gouldner, 1960; Organ, 1990). For example, employees who receive expected rewards feel an obligation to reciprocate in a favorable way to the organization or supervisors. The more often a particular behavior is favorably compensated the more likely individuals are to perform that behavior again (Griffith, Harvey, & Lusch, 2006). In contrast, employees are likely to avoid unfavorable exchange relationships by adjusting their attitudes and behaviors downward in response to treatment such as insufficient reward or unexpected punishment.

According to (Blau, 1964), the employment relationship can be characterized as consisting of economic and social exchanges. Economic exchanges involve the specified obligations with respect to short-term interactions of materialistic resources, whereas social exchanges involve nonspecified and informal agreements regarding long-term interactions of intangible resources (Cropanzano & Mitchell, 2005; Scott & Colquitt, 2007). In high quality economic exchanges, employees believe their relationships with the organization incorporate a set of pecuniary obligations in exchange for fulfillment of job duties (Scott & Colquitt, 2007). Thus, obligations in economic exchange relationships are reciprocal in a narrow sense in that the obligation does not go beyond a mutual transaction for equitable rewards (Shore, Bommer, Rao, & Seo, 2009). For instance, equity theory posits that employees are likely to balance the economic exchange and restore equity perceptions through a mental calculation that compares their own ratio of input and output to the corresponding ratio of the other person (Adams, 1965).

On the other hand, social exchange relationships invoke a sense of reciprocal obligation that motivates individuals to behave voluntarily in ways that are beneficial to the source of the positive treatment (Song et al., 2008). When they are present, employees are willing to reciprocate by discretionary actions that transcend contractually assigned job achievements (Janssen, 2000). In other words, once social exchange relationships are created, employees will be more willing to exert extra effort for enhanced performance and less likely to leave the organization.

The concepts of social exchange and the norm of reciprocity can be applied to organizational justice. In the context of organizational justice, social exchange frameworks adopt the view that employees regard fair treatment from their organization or supervisor as a benefit deserving reciprocation (Blader & Tyler, 2005; Scott & Colquitt, 2007). Specifically, fairness allows employees to redefine their employment relationships as economic and social exchanges, with positive work behaviors such as good work attitudes, organizational citizenship behavior, and job performance (Colquitt et al., 2013; Moorman, 1991). In the context of economic exchange, perceptions of effort–reward fairness reflect the sort of tangible resource that leads to a narrow set of bounded reciprocity on the part of employees by fulfilling their job duties and responsibilities. Thus, it should be noted that distributive justice could be subsumed into an economic exchange framework because it emphasizes personal outcomes and short-term character (Roch & Shanock, 2006). Scholars, on the contrary, have suggested that social exchanges are closely associated with procedural and interpersonal justice, in the sense that fair procedures and interpersonal treatment focus on socioemotional aspects of the employment relationship and long-term character (Rupp & Cropanzano, 2002; Scott & Colquitt, 2007; Sweeney & McFarlin, 1997).

Justice Climate and Work Attitudes

Over the past decade, interest in exploring working conditions to improve employees'

positive work attitude has witnessed a dramatic increase in public administration (Rainey, 2014).

Two types of public employee attitudes are widely researched subjects: job satisfaction and

affective commitment. Job satisfaction is defined as "an overall affective orientation on the part

of individuals toward work roles which they are presently occupying" (Kalleberg, 1977, p. 126).

On the other hand, affective commitment refers to "a strong belief in and acceptance of the

organization's goals and values; a willingness to exert considerable effort on behalf of the

organization; and a definite desire to maintain organizational membership" (Porter, Steers,

Mowday, & Boulian, 1974, p. 604). According to Allen and Mayer (1990), this attitudinal

dimension is one of a multidimensional mode of organizational commitment. Public

administration scholars have paid considerable attention to the determinants of job satisfaction

and affective commitment. For instance, a variety of managerial practices and personal

characteristics, such as diversity management (Choi, 2009), family-friendly policy (Caillier,

2013a; Saltzstein, Ting, & Saltzstein, 2001), participative management (Wright & Kim, 2004),

and leadership styles (Fernandez, 2008; Park & Rainey, 2007; Wright, Moynihan, & Pandey,

2012), and public service motivation (Castaing, 2006) are crucial determinants of employees'

satisfaction with their job and emotional attachment to their organization.

Although considerable progress has been made in researching the two types of job

attitudes, little scholarly effort has been devoted to understanding how fair treatment impacts on

employees' emotional responses. SET provides potential explanations for why fairness

perceptions enhance positive work attitudes (Gould-Williams, 2007; Haar & Spell, 2009; Scott &

Colquitt, 2007). Drawing from the norm of reciprocity, one method for employees to repay their

organization or supervisors is through their level of favorable affective reactions when they are

fairly treated (Saks, 2006). That is, perceived organizational justice is linked with the formation

of social exchange relationships that lead employees to exhibit a greater amount of positive

emotional resources toward their work roles (Rupp & Cropanzano, 2002). Because fair treatment

operates as a signal to employees, indicating the extent to which their organizations and

supervisors value their work efforts (Hassan, 2013), the workers feel committed, with high levels

of job satisfaction and loyalty towards the organization.

Indeed, a plethora of empirical studies focusing on private sectors have provided

considerable evidence supporting the positive relationships between justice perceptions and job

satisfaction and affective organizational commitment at the individual level (Foley, Hang-Yue,

& Wong, 2005; Jones & Martens, 2009; Konovsky & Cropanzano, 1991; S. S. Masterson, Lewis,

Goldman, & Taylor, 2000; McFarlin & Sweeney, 1992; Nadiri & Tanova, 2010; Ohana, 2014;

Paré & Tremblay, 2007; Strom, Sears, & Kelly, 2014; Wang, Liao, Xia, & Chang, 2010; Wu &

Chaturvedi, 2009). However, some of the studies reported mixed findings about the effects of

justice on the two work attitudes. For example, in a study testing the impact of three justice

dimensions (i.e., distributive, procedural, and interactional justice) on a variety of work-related

outcomes, Aryee et al. (2002) found that, while distributive and procedural justice is positively

related to job satisfaction and affective organizational commitment, interactional justice has no

significant impact on the two job attitudes. In another study, using a sample of employees in a

hotel industry, Fulford (2005) reported that procedural justice and interactional justice are

positively related to job satisfaction, whereas distributive has no significant impact. Moreover,

none of the justice dimensions offer statistically significant predictors of commitment to the

organization. Interestingly, in examining the differences in the impact of justice by gender,

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Jepsen and Rodwell (2012) found that interpersonal justice is a significant predictor of affective commitment, whereas informational justice is a significant predictor of job satisfaction for women. On the other hand, for men, distributive justice has a positive effect on both attitudes, whereas informational justice has a positive effect only on affective commitment.

Although relatively little attention has been given to the role of fair treatment in shaping work attitudes in public administration, many scholars have been accumulating evidence supporting the public employees' fairness perceptions as significant drivers to positive job satisfaction and affective commitment at the individual level. For example, Choi (2011) found positive relationships between three dimensions of justice—distributive, procedural and interpersonal justice—and work-related attitudes, including trust in leadership, job satisfaction, and turnover intention in U.S. federal government. More interestingly, the impact of distributive justice on work attitudes emerges as the strongest among the three justice dimensions. In addition, there are several studies focusing on procedural justice - job satisfaction linkage. For example, (Choi & Rainey, 2014; Ko & Hur, 2014; Rubin, 2009) revealed that federal employees reported higher levels of job satisfaction when they perceived higher levels of fair procedures.

Unfortunately, little is known about the potential impact of organizational justice on affective organizational commitment, compared to job satisfaction. It is reasonable to suppose that employees will be satisfied with their jobs when they are treated fairly. Hassan (2013), however, focused on the connections between organizational fairness and organizational identification - feeling of belonging within the organization. Using a sample of employees in local governments, he found that distributive justice and procedural justice represent significant predictors of facilitating organizational identification. This finding provides the possibility of the positive impact of four justice dimensions on affective commitment in federal agencies.

In addition to the individual level, organizational justice has presented a beneficial association with shared perceptions of job satisfaction and affective commitment at the organizational level. The justice climate research is based on the assumption that perceived organizational justice occurs not only from individual experiences but also from the collective experiences of others within the unit (Lind et al., 1998). Consistent with this rationale, recent research has aimed to study the justice climate and organizational-level outcomes. Specifically, Simons and Roberson (2003) found that procedural justice climate strengthens members' commitment to the department as a whole, whereas interpersonal justice climate strengthens members' collective satisfaction with supervisors. Focusing on the effects of procedural justice climate on attitudinal outcomes, Liao and Rupp (2005) and Walumbwa, Wu, and Orwa (2008) provided the same finding regarding the positive relationship between the collective perceptions of procedural justice and the two work attitudes - aggregated job satisfaction and affective commitment. Along the same lines as previous works, Whitman et al. (2012), in their meta-analysis, demonstrated that distributive, procedural, and interactional justice climate lead to stronger unit-level satisfaction and commitment.

In summary, the aforementioned studies support the idea of reciprocity in social exchange relationships. In the context of the work environment, perceived justice at both the individual and organizational level promote a collective sense of indebtedness and obligation that motivates employees to repay the organization and supervisors through high levels of job satisfaction and affective commitment. Notwithstanding the abundance of empirical work on the issue of justice perceptions and their consequences at the individual level, no studies, however, have attempted to examine the impact of justice climate facets and organization-level outcomes in public administration. This is surprising given that shared justice perceptions predict variance

in collective work attitudes beyond the impact of individual justice level justice perceptions

(Liao & Rupp, 2005; Mossholder, Bennett, & Martin, 1998; Rupp, 2011; Yang et al., 2007).

Essentially, the consequences of justice at higher levels of analysis may offer better implications

of organizational practices in public organizations because justice climate provides more

comprehensive and reliable information for organizations, as a whole, to promote desired work

attitudes (Roberson & Colquitt, 2005). The following hypotheses, therefore, will be tested:

H1a: Distributive justice climate will be positively associated with collective job satisfaction.

H1b: Procedural justice climate will be positively associated with collective job satisfaction.

H1c: Informational justice climate will be positively associated with collective job satisfaction.

H1d: Interpersonal justice climate will be positively associated with collective job satisfaction.

H2a: Distributive justice climate will be positively associated with collective affective commitment.

H2b: Procedural justice climate will be positively associated with collective affective commitment.

H2c: Informational justice climate will be positively associated with collective affective commitment.

H2d: Interpersonal justice climate will be positively associated with collective affective commitment.

Justice Climate and Subjective Organizational Performance

Achieving higher levels of public service performance is a major goal of public

organizations (Brewer & Selden, 2000; S.-Y. Lee & Whitford, 2013; Rainey, 2014). A growing

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body of research has focused on the question of what managerial practices and resources improve organizational performance (Boyne, 2004; Brewer & Selden, 2000; Hill, 2005; Riccucci, Rainey, & Thompson, 2006). For example, empirical findings indicate that a variety of managerial practices and organizational characteristics including diversity management (Choi & Rainey, 2010), goal ambiguity, (Chun & Rainey, 2005; Jung, 2011), managerial networking (O'Toole & Meier, 2003), work collaboration (Whitford, Lee, Yun, & Jung, 2010), managerial leaderships (Paarlberg & Lavigna, 2010), and organizational resources (S.-Y. Lee & Whitford, 2013) influence organizational performance.

Although much attention has been devoted to the impact of various strategies and policies in improving organizational performance, little research has demonstrated clearly the beneficial effects of organizational justice in public administration. Many scholars have argued that the influence of the four justice dimensions on performance can be explained in terms of a social exchange view (Aryee, Chen, & Budhwar, 2004; Organ, 1990; Wang et al., 2010). As discussed above, social exchange theory contends that individuals who receive tangible or intangible rewards for valued contributions from organizations and supervisors develop a sense of obligation and reciprocate with positive attitudinal and behavioral responses (Gould-Williams, 2007; Shore et al., 2009). Employees perceive fair treatment from the organization or supervisors as a benefit deserving reciprocation (Blader & Tyler, 2005; Lavelle et al., 2009). In the context of economic exchange, perceptions of effort–reward fairness reflect the sort of tangible resource that leads to a narrow set of bounded reciprocity on the part of employees by fulfilling their job duties and responsibilities (Biswas, Varma, & Ramaswami, 2013). Scholars have also suggested that fair treatment about interpersonal elements of exchanges may nudge employees into social

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exchange relationships where they are more likely to increase job performance and contribute to organizational goal achievement (Cohen-Charash & Mueller, 2007; Scott & Colquitt, 2007).

The evidence from private sector studies has shown that perceived fairness of outcomes, decision-making procedures, and interpersonal treatment are related to higher levels of job performance. Janssen (2000), for example, examined the positive relationships between distributive justice and subjective assessments of job performance in a Dutch industrial organization. Similarly, Ramaswami and Singh (2003) in examining the impact of three dimensions—distributive, procedural, and interactional justice—on task performance of sales staff, revealed that distributive justice only has a significant effect on individual performance improvement. One possible explanation for these results is that employees' perceptions of the balanced effort-reward ratio can be expected to reciprocate the organization in the form of enhanced performance (Konovsky & Pugh, 1994). Conversely, perceived inequity provides a negative emotional state, requiring employees to reduce their efforts to restore the perception of equity (Dittrich & Carrell, 1979). In addition to distributive justice, a number of scholars provided strong evidence supporting that procedural justice and interactional justice are powerful predictors of job performance (Cohen-Charash & Spector, 2001; Colquitt et al., 2001; Colquitt et al., 2013; DeConinck & Johnson, 2009; Wang et al., 2010). For example, Aryee et al. (2004) found that perceived fairness of procedures used in the allocation process was positively related to subjective task performance of employees in a manufacturing and newspaper company. Otto and Mamatoglu (2015) recently investigated the relationships between interactional justice and self-rated performance and found that supportive supervisors who provided all necessary information and respectful treatment motivated their subordinates to contribute to fulfilling organizational goals. These findings from the previous literature, as a whole, indicate that

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improved work performance is one way that employees reciprocate for the use of fair procedures and quality of interpersonal treatment (Cropanzano, Prehar, & Chen, 2002; S. S. Masterson et al., 2000; Moorman, Blakely, & Niehoff, 1998; Pillai, Schriesheim, & Williams, 1999; Wang et al., 2010).

In addition to the individual level of organizational justice, scholars have begun to examine organizational justice climate-performance relations at the organizational level, but focused primarily on the impact of procedural justice climate. Naumann and Bennett (2000), for instance, found that procedural justice climate has a positive influence over subjective work group performance as measured by supervisors' ratings, but it shows insignificant impact on financial measures of net profitability. In the same vein, Colquitt et al. (2002) reported a beneficial relationship between shared perceptions of procedural justice and perceived team performance (e.g., productivity, efficiency, and quality about goal achievement) in an automobile parts manufacturing company. Recently, some scholars have focused on peer justice as a shared perception to show how employees form the fairness with which they treat one another (Li & Cropanzano, 2009; Li et al., 2013). Cropanzano, Li, and Benson (2011) found empirical evidence in support of the positive effects of peer procedural justice climate and peer interpersonal justice climate on subjective team performance through task and interpersonal teamwork process. Together, these findings support that organizational justice climate enhances employees' feelings of obligation to their organization in the form of improved performance.

Overall, previous research provides compelling evidence that organizational justice, both at the individual level and at the unit level, plays a central role in increasing subjective and objective organizational performance. Grounded in social exchange theory, reciprocal obligations derived from collective perceptions of fair treatment encourage employees to

increase job efforts for their organization in order to increase performance (Aryee et al., 2004;

Organ, 1990; Wang et al., 2010; Zhang & Agarwal, 2009). However, understanding of the justice

climate-performance linkage is still limited. To my knowledge, there are few previous studies

about how shared perceptions of the four types of organizational justice in public organizations

affect performance (except for Moon & Christensen, 2015). In addition, little attention has been

given to the effects of multiple forms of justice climate on performance in the business

management field. Specifically, I investigate the relationships between the four types of justice

climate and two types of organizational performance (i.e., work quality and mission

achievement). Thus, this study examines the following hypotheses:

H3a: Distributive justice climate will be positively associated with collective perceptions of work quality.

H3b: Procedural justice climate will be positively associated with collective perceptions of work quality.

H3c: Informational justice climate will be positively associated with collective perceptions of work quality.

H3d: Interpersonal justice climate will be positively associated with collective perceptions of work quality.

H4a: Distributive justice climate will be positively associated with collective perceptions of mission achievement.

H4b: Procedural justice climate will be positively associated with collective perceptions of mission achievement.

H4c: Informational justice climate will be positively associated with collective perceptions of mission achievement.

H4d: Interpersonal justice climate will be positively associated with collective perceptions of mission achievement.

Justice Climate and Turnover

Turnover continues to be a topic of interest in public administration. A primary reason driving the number of studies is that turnover is detrimental to the efficient functioning of organizations, as it causes organizational costs for recruiting and training new employees as well as human capital loss (Bertelli, 2007; S.-Y. Lee & Whitford, 2008; Moynihan & Pandey, 2008). Looking at the literature on turnover models, considerable evidence indicated that a variety of organizational context—managerial practices, employee work attitudes, and institutional/demographic factors—influence both turnover intention and actual turnover behavior.

First, some researchers have focused on the effect on employee turnover of human resource management practices, such as diversity management (Choi, 2009) , family-friendly policies (J. Kim & Wiggins, 2011; Ko & Hur, 2014; S. Y. Lee & Hong, 2011), performance-based practices (G. Lee & Jimenez, 2011), employee voice (S.-Y. Lee & Whitford, 2008; Whitford & Lee, 2015), and transformational leadership (Caillier, 2013b). Second, researchers have found that various work attitudes—job satisfaction, organizational commitment, job involvement, public service motivation, supervisory trust, pay satisfaction, and training satisfaction—influence employee turnover intention and behavior (Caillier, 2011; Campbell & Im, 2015; Cho & Perry, 2012; Hassan, 2013; Moynihan & Landuyt, 2008; Pitts, Marvel, & Fernandez, 2011). Finally, many researchers have reported that institutional and demographic factors including unemployment rate (Selden & Moynihan, 2000), goal ambiguity (Jung, 2014), role clarity (Hassan, 2013; Soonhee Kim & Wright, 2007), and individual characteristics (Grissom, Nicholson-Crotty, & Keiser, 2012; Langbein & Stazyk, 2013; Rubin, 2009; Sabharwal, 2015) are important predictors of employee turnover.

With respect to predictors of turnover, researchers suggested that organizational justice is a valuable asset to reduce employees' intention to leave their organizations (Cohen-Charash & Spector, 2001; Colquitt et al., 2001). According to social exchange theory, employees are prone to feel obligated to reciprocate when they value the outcomes received from the organization. When employees perceive that they are fairly treated in outcome distributions, the administrative procedures by which those outcomes are allocated, and interpersonal elements of exchange, they are likely to repay fair treatment by remaining loyal and continuing to work in their current organization (Bal, de Lange, Ybema, Jansen, & van der Velde, 2011). On the contrary, unfair treatment leads employees to quit their job or transfer to other parts of the organization to seek fairer outcomes and increase the fairness of the interpersonal exchanges (Poon, 2012; Tekleab, Takeuchi, & Taylor, 2005).

Empirical evidence regarding the negative effects of organizational justice on individual-level turnover intention is encouraging (Ambrose & Cropanzano, 2003; Griffeth & Gaertner, 2001; Kernan & Hanges, 2002; Konovsky & Cropanzano, 1991; S. S. Masterson et al., 2000), for example, investigated justice-turnover linkage within the context of drug testing programs and revealed that distributive and procedural justice perceptions are negatively related to employee turnover intention. In addition, Poon (2012) and Farooq and Farooq (2014), in examining private sector employees across countries, revealed that both distributive and procedural justice reduced turnover intention, but distributive justice was a better predictor for the intent to leave their companies. Recognizing that justice perceptions can be made about the actions of both supervisors and organizations, several scholars included interactional justice alongside the two types of structural justice—distributive and procedural justice. For example, Nadiri and Tanova (2010) provided evidence supporting that while distributive and procedural justice increase

employees' intention to remain with their organization, interactional justice also is a strong predictor for staying. This result indicates that perceived fairness in the supervisors' interaction with their employees has a negative impact on turnover intention. Finally, two meta-analyses suggest that employees who perceive distributive, procedural, and interactional justice are less likely to have turnover intention (Cohen-Charash & Spector, 2001) and job withdrawal intention (Colquitt et al., 2001).

Public administration scholars reported similar findings about the negative impact of organizational justice on individual level turnover intention (Choi, 2011; Hassan, 2013; Ko & Hur, 2014; Rubin, 2009). For instance, Hassan (2013) found that perceptions of distributive and procedural fairness have negative influences on organizational identification, job involvement, and turnover intention of public employees in state government. One possible reason may be that perceived fairness in organizational procedures that determine outcomes tends to have-long term rewards such as attachment to the organization, whereas perceived fairness in outcome distributions are more likely to focus on short-term rewards such as pay satisfaction (Folger & Konovsky, 1989; McFarlin & Sweeney, 1992). Focusing on procedural justice in federal government, the two studies conducted by Rubin (2009) and Ko and Hur (2014) consistently reported that the employees' fairness perceptions on methods employed to determine the distribution of rewards are powerful predictors of reducing turnover intention. In addition to distributive and procedural justice, another two empirical studies also found that informational justice (Cho & Sai, 2012) and interpersonal justice (Choi, 2011) are negatively related to turnover intention of federal employees.

Taken together, a number of previous studies have shown that lower levels of organizational justice do indeed relate to higher turnover intentions. Drawing on the social

exchange perspective, if employees are treated unfairly, the norm of reciprocity is harmed

(Biswas et al., 2013; Brebels, De Cremer, Van Dijke, & Van Hiel, 2011). Such employees view

unfair treatment as a violation of reciprocal obligations. Under such a context, it is possible that

perceived injustice undermines employees' belief in the benefits of remaining in the exchange

relationship with the organization and supervisors, leading them to consider ending it by leaving

(Poon, 2012; S. L. Robinson & Rousseau, 1994). Despite considerable scholarly attention to the

significant predictors of turnover intention of public employees (Choi, 2011; Hassan, 2013; Ko

& Hur, 2014; Rubin, 2009), very few studies have examined how the four dimensions of

organizational justice influence intention to leave an organization (Conlon, Meyer, &

Nowakowski, 2005). Furthermore, although recognizing that shared perception of fair treatment

at the organizational level may explain additional variance in individual level outcomes over and

above individual justice perception, we know relatively little about the four dimensions of justice

climates-turnover behavior (i.e., actual turnover rates) in federal agencies (Lin & Leung, 2014). I

propose that the beneficial role of organizational justice on intentional eagerness to stay in the

organization at the individual level has been revealed in the relationships between the aggregated

justice perceptions and turnover at the organizational level. Specifically, organizational justice

climates have negative relationships with turnover intention and behavior. Thus, I will test the

following hypothesis:

      H5a: Distributive justice climate will be negatively associated with collective turnover
                  intention.

      H5b: Procedural justice climate will be negatively associated with collective turnover
                  intention.

      H5c: Informational justice climate will be negatively associated with collective
                  turnover intention.

H5d: Interpersonal justice climate will be negatively associated with collective turnover intention.

H6a: Distributive justice climate will be negatively associated with collective turnover behavior.

H6b: Procedural justice climate will be negatively associated with collective turnover behavior.

H6c: Informational justice climate will be negatively associated with collective turnover behavior.

H6d: Interpersonal justice climate will be negatively associated with collective turnover behavior.

Two-Factor Model - Focusing on the Two Contents of Justice (i.e., Outcome and Process)

A number of researchers have posited that perceptions of distributive, procedural, informational, and interpersonal justice should not be identically affiliated to work-related outcomes (Colquitt et al., 2001). Just like the multifoci model in Chapter 3, the two-factor model focusing on content of justice judgment provides a theoretical lens to examine varying effects of the four justice dimensions on work attitudes and behaviors (see figure 5) (Sweeney & McFarlin, 1997).

The fundamental idea of the model is that outcome-focused justice (i.e., distributive and interpersonal) is a stronger predictor of person-related outcomes (i.e., job satisfaction and turnover intention), whereas process-focused justice (i.e., procedural and informational) is a predictor of organization-related outcomes (i.e., organizational commitment and performance) (Ambrose, Hess, & Ganesan, 2007; Cohen-Charash & Spector, 2001; Colquitt et al., 2001; Folger & Konovsky, 1989; Lind & Tyler, 1988; McFarlin & Sweeney, 1992; Sweeney & McFarlin, 1997). Considering the distributive justice as outcome-focused (see Chapter 3), it

would seem plausible that it has the strongest effect on individual and specific outcomes (Cho & Sai, 2012; Colquitt et al., 2001). In contrast, procedural justice climate as process-focused is more influential on work-related outcomes about the organization than distributive justice (Ambrose et al., 2007; Folger & Konovsky, 1989).

Although organizational justice research traditionally separated two dimensions of interactional justice—informational and interpersonal justice—from procedural justice, both dimensions are categorized into outcome-focused justice and process-focused justice. Specifically, interpersonal justice climate involves a social aspect of outcome distribution, whereas informational justice is concerned with a social aspect of formal procedures (Greenberg, 1993). That is, similar to distributive justice, interactional justice is a stronger predictor of person-related outcomes. On the contrary, similar to procedural justice, informational justice is a stronger predictor of organization-related outcomes. The two factor model, accordingly, is applicable to test the relative influence of the four dimensions of organizational justice.

Indeed, in an early examination of these differential effects, Folger and Konovsky (1989) found that distributive justice has a greater leverage on satisfaction with pay, whereas distributive justice exerts a greater influence on organizational commitment and trust in leadership. Another study, conducted by McFarlin and Sweeney (1992), found that employees who perceive they are being fairly treated with respect to outcome distributions and the methods used to make allocation decisions, are not only satisfied with their pay levels and jobs but also reported high levels of organizational commitment and evaluation of supervisor. Similar to Folger and Konovsky (1989), the results also supported that procedural justice is a more important predictor of pay satisfaction and job satisfaction than procedural justice, while the reverse is demonstrated for organizational commitment and trustworthiness of supervisor. These

findings support the two-factor model. In a more thorough demonstration of the relationship between distributive, procedural, and informational justice, Konovsky and Cropanzano (1991) reported that procedural justice and informational justice are more predictive of affective commitment than distributive justice. Furthermore, they found that employee performance and turnover intention are only statistically significant with procedural justice. As a result, the finding partially supported the two-factor model.

Looking at the public administration literature, scholars offer somewhat mixed empirical evidence about the two-factor model. To be specific, Choi (2011) revealed that distributive justice turns out to be more influential on turnover intention and job satisfaction in federal government than procedural and interactional justice. Conversely, Cho and Sai (2012) found that informational justice has a larger leverage on job satisfaction of federal employees than distributive and procedural justice.

Taken together, reviews of the organizational justice literature suggest that differential effects of the four dimensions of justice on work outcomes; outcome-focused justice (distributive and interpersonal) exert greater influence on person-related outcomes (i.e. job satisfaction, turnover intention, and turnover behavior) whereas process-focused justice(procedural justice and informational) exert greater influence on organization-related outcomes (i.e., affective commitment and subjective organizational performance). Many scholars presented empirical evidence supporting the two-factor model (Cropanzano & Greenberg, 1997; Folger & Konovsky, 1989; Greenberg, 1987; McFarlin & Sweeney, 1992). Yet, it should be noted that some studies partially support the differential predictions (Cho & Sai, 2012; Cohen-Charash & Spector, 2001; Colquitt et al., 2001; Whitman et al., 2012).

Given that the two-factor model is widely acknowledged, it is surprising that little

research has been undertaken on the relative effects of the organizational justice climates on

employee work outcomes at the organizational level. In addition, very little research

simultaneously examines the differential impact of all four dimensions of justice climate,

although the model is applicable to predict the two dimensions of interactional justice climate, as

well as distributive and procedural justice climate. In filling these gaps, I test the following

hypotheses:

H7:   Outcome-focused justice climates (i.e., distributive and interpersonal) will more
        strongly associated with collective job satisfaction than process-focused justice
        climate (i.e., procedural and informational).

H8:   Process-focused justice climates (i.e., procedural and informational) will be
        more strongly associated with collective affective commitment than outcome-
        focused justice climates (i.e., distributive and interpersonal).

H9:   Process-focused justice climates (i.e., procedural and informational) will be
        more strongly associated with collective perceptions of work quality than
        outcome-focused justice climates (i.e., distributive and interpersonal).

H10:   Process-focused justice climates (i.e., procedural and informational) will be
        more strongly associated with collective perceptions of mission achievement
        than outcome-focused justice climates (i.e., distributive and interpersonal).

H11:   Outcome-focused justice climates (i.e., distributive and interpersonal) will be
        more strongly associated with collective turnover intention than process-
        focused justice climates (i.e., procedural and informational).

H12:   Outcome-focused justice climates (i.e., distributive and interpersonal) will be
        more strongly associated with collective turnover behavior than the two
        process-focused justice climates (i.e., procedural and informational).

Summary and Conclusion

The purpose of this chapter is to explore the consequences of the four dimensions of

organizational justice climate in federal government. Thus far, previous research in public

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administration has focused on perceived justice on individual-level outcomes (see Rubin and Kellough (2012) for an exception), but there is a lack of scholarly effort on examining the relationships between justice climate and organization-level outcomes. Recognizing that Lind et al. (1998, p. 19) noted that "the potential information about the fairness of any given authority or institution lies in collective, not personal, experiences", this omission in public administration is somewhat surprising.

In order to address this void, I have extended individual-level justice construct to the climate level and examined the relationships between four types of justice climate and work-related outcomes. Based on social exchange theory, I propose that the aggregated perception of being treated fairly as a group serves to promote the norm of reciprocity, which leads to higher levels of the two types of work attitude (i.e., job satisfaction and affective commitment) and the two types of subjective organizational performance (i.e., work quality and mission achievement), but lower levels of the two types of turnover (i.e., turnover intention and actual turnover behavior).

Beyond the causal directions, I have also extended previous research by demonstrating differential effects of the four dimensions of justice climate on the work outcomes at the federal agency level. Drawing from the two-factor model, I propose that while two dimensions of outcome-focused justice climate have stronger impact on person-related outcomes (i.e., job satisfaction, turnover intention, and turnover behavior), the two dimensions of process-focused justice climate have stronger impact on organization-related outcomes (i.e., affective commitment, work quality, and mission achievement).

Thus, the first contribution offered by this chapter is to demonstrate that justice climate exerts a positive influence on the organizational-level outcomes beyond the effects of individual

justice perceptions. Another contribution is that the findings about relative effects of justice

climate may offer significant impact to public managers, in that they might consider which

dimensions of justice climate should be prioritized to improve the target work outcomes. Table 3

provides all hypotheses of this chapter.

Figure 5. Conceptual Framework of Two-Factor Model - Focusing on the Two Contents of Justice (i.e., outcome and process)

	Source of Justice Climate	
	System-referenced *(Non-interactional dimensions)*	Supervisor-referenced *(Interactional dimensions)*
Outcome-Focused	**Distributive Justice Climate** (i.e., aggregated perceptions of distributive justice at the individual level)	**Interpersonal Justice Climate** (i.e., aggregated perceptions of interpersonal justice at the individual level)
Process-Focused	**Procedural Justice Climate** (i.e., aggregated perceptions of procedural justice at the individual level)	**Informational Justice Climate** (i.e., aggregated perceptions of informational justice at the individual level)

Content of Justice Climate

Table 3. Summary of Hypotheses

	Justice Climate and Work Attitudes
H1a:	Distributive justice climate will be positively associated with collective job satisfaction.
H1b:	Procedural justice climate will be positively associated with collective job satisfaction.
H1c:	Informational justice climate will be positively associated with collective job satisfaction.
H1d:	Interpersonal justice climate will be positively associated with collective job satisfaction.
H2a:	Distributive justice climate will be positively associated with collective affective commitment.
H2b:	Procedural justice climate will be positively associated with collective affective commitment.
H2c:	Informational justice climate will be positively associated with collective affective commitment.
H2d:	Interpersonal justice climate will be positively associated with collective affective commitment.

	Justice Climate and Subjective Organizational Performance
H3a:	Distributive justice climate will be positively associated with collective perceptions of work quality.
H3b:	Procedural justice climate will be positively associated with collective perceptions of work quality.
H3c:	Informational justice climate will be positively associated with collective perceptions of work quality.
H3d:	Interpersonal justice climate will be positively associated with collective perceptions of work quality.
H4a:	Distributive justice climate will be positively associated with collective perceptions of mission achievement.
H4b:	Procedural justice climate will be positively associated with collective perceptions of mission achievement.
H4c:	Informational justice climate will be positively associated with collective perceptions of mission achievement.
H4d:	Interpersonal justice climate will be positively associated with collective perceptions of mission achievement.

	Justice Climate and Turnover
H5a:	Distributive justice climate will be negatively associated with collective turnover intention.
H5b:	Procedural justice climate will be negatively associated with collective turnover intention.
H5c:	Informational justice climate will be negatively associated with collective turnover intention.

H5d: Interpersonal justice climate will be negatively associated with collective turnover intention.

H6a: Distributive justice climate will be negatively associated with collective turnover behavior.

H6b: Procedural justice climate will be negatively associated with collective turnover behavior.

H6c: Informational justice climate will be negatively associated with collective turnover behavior.

H6d: Interpersonal justice climate will be negatively associated with collective turnover behavior.

Two-Factor Model - Focusing on the Two Contents of Justice

H7: Outcome-focused justice climates (i.e., distributive and interpersonal) will more strongly associated with collective job satisfaction than process-focused justice climate (i.e., procedural and informational).

H8: Process-focused justice climates (i.e., procedural and informational) will be more strongly associated with collective affective commitment than outcome-focused justice climates (i.e., distributive and interpersonal).

H9: Process-focused justice climates (i.e., procedural and informational) will be more strongly associated with collective perceptions of work quality than outcome-focused justice climates (i.e., distributive and interpersonal).

H10: Process-focused justice climates (i.e., procedural and informational) will be more strongly associated with collective perceptions of mission achievement than outcome-focused justice climates (i.e., distributive and interpersonal).

H11: Outcome-focused justice climates (i.e., distributive and interpersonal) will be more strongly associated with collective turnover intention than process-focused justice climates (i.e., procedural and informational).

H12: Outcome-focused justice climates (i.e., distributive and interpersonal) will be more strongly associated with collective turnover behavior than the two process-focused justice climates (i.e., procedural and informational).

CHAPTER 5

MODEL SPECIFICATION

In this chapter, I describe the two different data sources over a 5-year period (2010-2014)—Federal Employee Viewpoint Survey and Enterprise Human Resources Integration Statistical Data Mart—, variables of interest, the details involved in aggregating individual responses to the federal subagency level, and generalized estimating equations. Thus, the primary unit of analysis of this study is a federal subagency year.

Data

Federal Employee Viewpoint Survey

The first data source used in this study comes from five waves of Federal Employee Viewpoint Survey (FEVS) from 2010 to 2014, conducted by the U.S. Office of Personnel Management (OPM).[3] OPM published the FEVS annually by using a stratified random sampling method to obtain generalizable results representing the federal government.[4] With respect to dissemination, the FEVS was primarily sent electronically to full-time permanent employees across the federal government, at the department or large agency level and at the independent agency level. The number of respondents and response rates of the FEVS were: 263,475 and 52%

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[3] OPM is an independent federal agency that performs as the central human resources department of the executive branch. Generally, OPM collects and manages information regarding a large portion of the federal civilian workforce.
[4] The FEVS has been published by the Office of Personnel (OPM) biennially since 2002 until 2010 (formerly known as Federal Human Capital Survey).

(2010); 266,376 and 49.3% (2011); 687,687 and 46.1% (2012); 376,577 and 48.2% (2013); and

392,752 and 46.8% respectively (2014).[5] However, it is impossible to perform a panel analysis at

the individual level because the surveys are anonymous. The current study, therefore, averaged

individual responses to the organizational-level construct in order to conduct a longitudinal

analysis.

The FEVS has several advantages inherent in the survey's design and implementation for

the purpose of secondary analysis. First, the content of survey questionnaire has been largely

consistent, over time. The 2010 survey includes 78 items for employees' perceptions and 11

items for demographic characteristics. OPM has added 6 new items about opinions on work/life

programs since the 2011 survey. In addition, responses to the survey questions were consistently

ranked on a 5-point Likert-type scale that ranged between 1 (strongly disagree or very

dissatisfied) and 5 (strongly agree or very satisfied). The second advantage of using FEVS is that

it provides significant information about how well federal agencies are running human capital

systems. Specifically, the questionnaire focuses on employees' perceptions and experiences

regarding strategic management of human capital, such as leadership, job training and

development, and performance-based rewards. Finally, OPM weighted data by using information

about demographic characteristics, such as gender, race, supervisory status, age, and organization

size. The weights ensure representativeness by allowing each employee to have the same

probability of being selected.

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[5] It should be noted that the sample size across the time periods varied because the OPM has
changed the sampling frame of FEVS since 2012; the 2010 and 2011 survey only included full-
time, permanent employees, whereas surveys from 2012 to 2014 include part-time, permanent,
and nonseasonal employees. In particular, the sample size of 2012 survey nearly doubles that of
other surveys because OPM has administered it as a census survey to all eligible federal
employees (a total of 1,622,375 employees).

Enterprise Human Resources Integration Statistical Data Mart

The second data source was drawn from Enterprise Human Resources Integration Statistical Data Mart (EHRI-SDM) from 2010-2014 that includes federal workforce information.[6] OPM has established the EHRI-SDM in 2010 to provide access to personnel data for 96% of non-postal federal employees in U.S. executive branches. For instance, the data excludes agencies working on tasks related to national security, intelligence, and postal service. Despite these exclusions, the EHRI-SDM is widely regarded as a comprehensive data warehouse available for statistical information regarding the size and scope of the federal workforce. Specifically, the data consists of five subject categories called "cubes": (1) employment (e.g., age, gender, and salary level); (2) accession; (3) separation; (4) employment trends; and (5) diversity. FedScope (www.fedscope.opm.gov) provides online access to the EHRI-SDM, covering the most recent five years of the five cubes.

Main Variables of Interest

One crucial consideration is how to create the organization-level construct of justice climate based on the responses at the lower level (individual justice perceptions). In this regard, scholars start with measuring four distinct dimensions of organizational justice at the individual-level using confirmatory factor analysis (CFA) (Li et al., 2013; Moliner et al., 2005; Spell & Arnold, 2007). Once the dimensionality of organizational justice is established, the next step is to aggregate or average individual responses to the organizational level. In this section, I describe a set of items to measure individual-level justice perceptions and create different types of justice using CFA. Then, I discuss how to create justice climate from the individual-level constructs.

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[6] EHRI-SDM has replaced Central Personnel Data File in fiscal year 2010.

Organizational Justice at Individual Level

Traditionally, organizational justice researchers have focused on a "two-factor" model of justice: distributive and procedural justice (Folger & Konovsky, 1989; Sweeney & McFarlin, 1997). With the introduction of interactional justice, a "three-factor" model specified distributive justice and procedural justice as two unique factors, and then interactional justice as a third factor (Cohen-Charash & Spector, 2001; Cropanzano, Byrne, et al., 2001). In this regard, Bies (2005) recommended researchers to "measure interactional justice as a construct separated from procedural justice" (p.95). Finally, researchers suggested a "four-factor" model in which interactional justice is separated into two distinct constructs: informational and interpersonal justice (Ambrose et al., 2007; Greenberg, 1993). Indeed, Colquitt (2001) suggested that "organizational justice is best conceptualized as four distinct dimensions: procedural justice, distributive justice, interpersonal justice, and informational justice" (p.396). Although the controversy on construct discrimination may not be conclusive in organizational justice researches (Bies, 2005; Colquitt & Shaw, 2005), a growing number of empirical studies have begun to employ a "four-factor" model of justice that distinguishes distributive, procedural, informational, and interpersonal justice (Colquitt, 2001; Liao & Rupp, 2005). 12 items from previous research in public administration were used to measure four dimensions of organizational justice (Cho & Sai, 2012; Choi, 2011; Choi & Rainey, 2014; Hassan, 2013; Rubin, 2009).

First, distributive justice refers to the degree to which rewards received by employees were perceived to be related to individual efforts or performance inputs. By the definition, distributive justice in this study was measured with three items that emphasize fair distribution of rewards, depending on contributions and performance (Choi, 2011; Kim & Rubianty, 2011).

- Promotions in my work unit are based on merit.

- Awards in my work unit depend on how well employees perform in their jobs.

- Pay raises depend on how well employees perform in their jobs.

The index reliability coefficients (Cronbach's α) for the distributive justice were: .84 (2010), .83 (2011), .83(2012), .83 (2013), and .84 (2014).

Second, procedural justice is defined as the fairness or transparency of the formal processes used in making outcome distribution decisions (Folger & Cropanzano, 1998). Many researchers have measured procedural justice by combining Leventhal's (1980) six decision rules: capturing consistency, bias suppression, accuracy, correctability, representativeness, and ethicality (Choi, 2011; Hassan, 2013; Rubin, 2009; Rubin & Chiqués, 2015; Rubin & Kellough, 2012). Four items were used to evaluate employees' perceptions of procedural justice that correspond with objectivity, correctability, and bias suppression.

- My performance appraisal is a fair reflection of my performance.

- I can disclose a suspected violation of any law, rule or regulation without fear of reprisal.

- Arbitrary action, personal favoritism and coercion for partisan political purposes are not tolerated.

- Prohibited personnel practices (for example, illegally discriminating for or against any employee/applicant, obstructing a person's right to compete for employment, knowingly violating veterans' preference requirements) are not tolerated.

The index reliability coefficients (Cronbach's α) for the procedural justice were: .82 (2010), .82 (2011), .82 (2012), .83 (2013), and .83 (2014).

Finally, informational justice refers to the degree to which employees receive timely information and clear explanation regarding how decisions are made, whereas interpersonal

justice refers to the degree to which employees are treated with politeness, dignity, and respect by supervisors (Greenberg, 1993). Three items were used to measure informational justice, testing perceived fairness in terms of whether one receives adequate explanations and information about events at work and the decisions made by the organization.

- Managers communicate the goals and priorities of the organization.

- Managers promote communication among different work units (for example, about projects, goals, and needed resources).

- How satisfied are you with the information you receive from management on what is going on in your organization?

The index reliability coefficients (Cronbach's α) for the informational justice were: .87 (2010), .86 (2011), .87 (2012), .87 (2013), and .87 (2014).

In order to measure interpersonal justice, I used two items that capture supervisors' respectful treatment of employees and listening to subordinates' concerns.

- My supervisor/team leader listens to what I have to say.

- My supervisor/team leader treats me with respect.

The index reliability coefficients (Cronbach's α) for the interpersonal justice were: .92 (2010), .92 (2011), .92(2012), .92 (2013), and .92 (2014).

Confirmatory Factor Analysis: Organizational Justice Factor Structures

A series of confirmatory factor analyses (CFA) was conducted to compare the four-factor measurement models developed and validated by (Colquitt, 2001). The four-factor models were: a one-factor model including all justice items to capture one larger organizational justice factor; a two-factor model dividing the items into distributive justice and procedural justice; a three-factor

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model dividing the items into distributive, procedural, and interactional justice (combining informational and interpersonal justice); and a four-factor model including distributive, procedural, informational, and interpersonal justice. The CFA results of each year (2010-2014) displayed in Figures 6 to 10 indicate that the four-factor model of organizational justice provides a significantly better fit to the data than that of other models. That is; organizational justice is best conceptualized as four distinct constructs: distributive, procedural, informational, and interpersonal justice.

Four Dimensions of Justice Climate at the Organizational Level

The central tenet for the development of justice climate originated from the organizational climate research which focuses on shared perceptions of individuals regarding working environment, including managerial practices and procedures (Schneider & Reichers, 1983; Whitman et al., 2012). Given that justice perceptions are socially constructed; that is, they are formed by interactions among members within the same organization (Li & Cropanzano, 2009), justice climate - shared perceptions regarding fairness - is likely to emerge in the organization (Naumann & Bennett, 2000).

Scholars have traditionally aggregated the individual-level justice perceptions to a higher-level justice climate (Colquitt et al., 2002; Moliner et al., 2005; Priesemuth et al., 2013; Roberson, 2006a, 2006b; Walumbwa, Wu, et al., 2008). According to Chan (1998), there are four ways of aggregating lower level responses to represent an upper level construct: (a) additive, (b) direct consensus, (c) referent shift, and (d) dispersion approach. First, the additive composition model argues that unit-level constructs are captured by estimating the summation of the lower level perceptions within the unit (Schneider, Salvaggio, & Subirats, 2002). Second, the direct consensus approach computes "within-group agreement of scores to index consensus at the

lower level and to justify aggregation of lower level scores to represent scores at the higher level" (Chan, 1998, p. 237). For example, one item is "I was treated fairly." If there is sufficient agreement among employees exceeding certain cutoff values, it is concluded that the aggregation of the individual scores is justified as organizational collective climate. Third, a referent-shift approach uses survey items that evaluate an individual's perceptions of external environment. An example item is "***My workgroup*** was treated with politeness and dignity." Finally, the dispersion approach focuses on the extent to which members within the same unit agree or disagree. The model suggests that "within-group variance (or some derivative) is used as the operationalization of the purported group-level construct" (Chan, 1998, p. 139), which is statistically reflected by the individual differences within the same group.

The choice of approaches is not only directly related to how the construct is operationalized but also the research questions of interest in the study. Although the additive approach is useful to create organization-level justice (Li & Cropanzano, 2009), a simple summation of individuals' justice perceptions does not guarantee sufficient consensus among organizational members. Also, it is inappropriate to use the referent-shift approach to measuring justice climate because a set of items measuring four justice dimensions asks individuals to judge their own perceptions. Finally, the primary research interest of this study is the average level of justice climate rather than the variance of justice climate, which represents justice climate strength based on the dispersion approach. As a result, drawing from the direct consensus approach, I measured the organizational justice climate as the average score of justice perception at the individual level, given a certain threshold of agreement among employees within the organization.

Collective Supervisory Trust

Collective supervisory trust is measured by three items. Two items are general elements of trust: "I have trust and confidence in my supervisor" and "I have a high level of respect for my organization's senior leaders." One item captures trust in leaders' ability: "How satisfied are you with the policies and practices of your senior leaders?" The index reliability coefficients (Cronbach's α) for the supervisory trust were: .81 (2010), .81 (2011), .80 (2012), .80 (2013), and .80 (2014). I calculate the average supervisory trust scores for each agency.

Collective Perceptions of Decentralized Structure

In this study, decentralized structure refers to the degree to which the organization allows employees to participate in decision-making and exercise autonomous decision and independent judgment over their job tasks (Schminke et al., 2000; Ambrose & Schminke, 2000; Schminke et al., 2002). Given that organizational structure is a shared phenomenon (Ambrose & Schminke, 2000), collective perceptions of decentralized structure at the individual level to organizational level is desirable (Rousseau, 1985; Covin & Slevin, 1989). Thus, shared perceptions of perceived decentralization are examined using an index that combines answers from two questions: "Do you have a feeling of personal empowerment with respect to work processes?" and "How satisfied are you with your involvement in decisions that affect your work?" The items capture two dimensions of centralization: participation in decision- making, and hierarchy of authority (Hage & Aiken, 1967; Schminke et al., 2002). The index reliability coefficients (Cronbach's α) for the supervisory trust were: .77 (2010), .77 (2011), .78 (2012), .78 (2013), and .79 (2014). Perceived decentralization was calculated as the average response to the two items.

Work Attitudes: Collective Job Satisfaction and Affective Commitment

The first type of work attitude, job satisfaction, was measured employing responses to three pertinent survey items frequently utilized in the literature (Cho & Sai, 2012). These items capture the overall satisfaction of employees with jobs, organizations, and pay. Considering that a great deal of research utilizes many different items to measure overall job satisfaction, including promotion, supervision, security needs, and senior leaders (Choi & Rainey, 2014; Rainey, 2014), it should be noted that the measure of this study may not cover all the factors of job satisfaction.

- Considering everything, how satisfied are you with your job?

- Considering everything, how satisfied are you with your pay?

- Considering everything, how satisfied are you with your organization?

The index reliability coefficients (Cronbach's α) for the interpersonal justice were: .78 (2010), .77 (2011), .77 (2012), .76 (2013), and .78 (2014).

The next type of work attitude is affective commitment, and this study utilized the three items used by (Moldogaziev & Silva, 2014).

- My work gives me a feeling of personal accomplishment.

- I like the kind of work I do.

- I recommend my organization as a good place to work.

These three items, in particular, are based on three main components of affective commitment: personal involvement, shared values, and a sense of identification with the organization (Meyer & Herscovitch, 2001; Moldogaziev & Silva, 2014). The index reliability coefficients (Cronbach's α) for affective commitment were: .79 (2010), .79 (2011), .79 (2012), .79 (2013), and .79 (2014). I averaged the ratings of the three items across respondents to create job satisfaction and affective commitment at the federal agency level.

Subjective Organizational Performance: Collective Perceptions of Work Quality and Mission Achievement

Despite considerable attention to organizational performance in public administration, scholars have yet to reach consensus regarding how to define and measure the concept (S.-Y. Lee & Whitford, 2013; Rainey, 2014). Two issues, in particular, have dominated: measurement criteria and performance indicators (i.e., subjective and objective measures). First, the performance of public organizations is a multiple-dimensional concept (R. Andrews, Boyne, Meier, O'Toole, & Walker, 2005). Different scholars have defined performance construct differently. For example, Chun and Rainey (2005) used four dimensions of organizational performance in the U.S. federal agencies: (1) managerial effectiveness, (2) customer service orientation, (3) productivity, and (4) work quality. Similarly, Choi and Rainey (2010) and Miller (2014) measured performance by combining the quality of work, managerial capability, and job-relevant resources and skills. In studies concerning public school districts, many scholars conceptualized performance as parental satisfaction (Charbonneau & Van Ryzin, 2012) and students' test scores (Favero, Meier, & O'Toole, 2016; O'Toole & Meier, 2003). Second, subjective and objective performance indicators are subject to continuing debate and controversy in public administration. Because of the lack of objective data on organizational performance (Sangmook Kim, 2005; Lynch & Day, 1996), many public administration scholars have relied on perceptual performance measures as an alternative (Fernandez & Moldogaziev, 2011; Jung & Lee, 2015; Miller, 2014; Moynihan & Pandey, 2005; Whitford et al., 2010).

Indeed, scholars have provided evidence of a strong correlation between subjective and objective measures. R. B. Robinson and Pearce (1988), for example, revealed that self-reported performance indicators of individual employees are positively correlated with financial measures of the organization's performance in the region of r=0.92, at the highest. Similarly, (Walker &

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Boyne, 2006, p. 378) noted that "a range of evidence demonstrates that there are positive and statistically significant correlations between objective and subjective measures of overall performance, some in the region of r=0.89." However, recent work by (Meier & O'Toole, 2013a, 2013b) have shown that self-assessment of performance is still vulnerable to generate misleading results because of common source bias.

In this study, I use two separate measures of organizational performance: perceived work quality and mission achievement. To measure work quality, the following single items are used: "How would you rate the overall quality of work done by your work group?" A single item was used to measure perceived mission achievement: "My agency is successful at accomplishing its mission." The two items not only have sufficient content validity but also avoid the problem of false positive by asking directly about the quality of the group's work and agency's mission attainment, as opposed to the respondent (Oberfield, 2014). Thus, work quality and mission achievements were created by averaging ratings of responses and using that average as the level value for each agency. Table 4 shows index reliability statistics about the variables.

Turnover: Collective Turnover Intention and Behavior

Turnover intention refers to "the cognitive process of thinking of quitting, planning on leaving a job, and the desire to leave the job" (Lambert & Hogan, 2009, p. 98). In the FEVSs, respondents are asked the following question: "Are you considering leaving your organization within the next year and if so, why?'' The possible response options are "No"'; "Yes, to retire"; "Yes, to take another job within the Federal Government"; "Yes, to take another job outside the Federal Government"; and "Yes, other." I constructed a dummy variable capturing intention to leave (1 for yes, 0 for no). Finally, responses to this item are average for collective turnover intention at the organizational level.

Similar to turnover intention, collective turnover behavior is measured as an actual turnover rate by dividing the number of employees who leave the organization during a certain period by the total workforce size (Hausknecht & Trevor, 2011). Specifically, I chose three types of separation to measure federal employees' turnover rates: a) individual transfer-out, b) quits, and c) retirements (i.e., voluntary and early out) (Jung, 2010). First, according to EHRI-SDM, individual transfer-out is defined as movement of a single employee to another agency. Second, quits refers to voluntary resignation or abandonment of job position by an employee. Finally, voluntary and early-out retirement refers to optional retirement in which an employee leaves a position or career path before meeting the minimum age and service requirements. Thus, actual collective turnover rates are computed as the total number of "individual transfer-out", "quits", "voluntary retirement", and "early-out retirement" divided by the total number of employees for each agency. In addition, because the turnover rate is a proportion that is bounded by 0 and 1, logit transformation was performed prior to the estimation of the linear models. Appendix provides the questionnaire items for all the main variables in this study.

Data Aggregation Tests

In order to justify the aggregation of data, several tests are required to verify whether or not there are sufficient within-group agreements on organizational justice perceptions in subagencies. First, the within-group inter-rater agreement index (r_{wg}) is calculated in order to demonstrate within-group homogeneity at the subagency level of organizational justice climate (James, Demaree, & Wolf, 1984).[7] The r_{wg} values are generally used in conjunction with multi-

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[7] When multiple judges rate the number of items, J, using an interval scale of measurement, the r_{wg} can be assessed using the equation as follows:

level modeling (LeBreton & Senter, 2007). Second, a one-way random-effects ANOVA is used

for each of these variables on individual level data. Bryk and Raudenbush (1992) developed two

indices to check the reliability of group responses: the intra-class coefficient ICC(1) and the

group mean reliability ICC(2). ICC(1) represents the proportion of the total variance that can be

explained by group membership, [8] while ICC(2) indicates an estimate of the reliability of the

group means.[9]

Table 5 shows aggregation statistics about organizational justice climate, work-related

attitudes, and performance for subagency level analysis. James (1982) reported that ICC(1)

values generally range from 0.00 to 0.50, with a median of 0.12 for the organizational literature.

The ICC(1) of four dimensions of organizational climate range from 0.01 to 0.04. For

instance, ICC(1) of shared distributive justice in FEVS 2010 is 0.04, which means that 4% of

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$$r_{wg(J)} = \frac{J\left(1 - \dfrac{\overline{S}^2_{X_j}}{\sigma^2_{EU}}\right)}{J\left(1 - \dfrac{\overline{S}^2_{X_j}}{\sigma^2_{EU}}\right) + \left(\dfrac{\overline{S}^2_{X_j}}{\sigma^2_{EU}}\right)}$$

X = an observed score
J = the number of items ranging from j=1 to J
$\overline{S}^2_{X_j}$ = the mean of the observed variances for J
σ^2_{EU} = the expected variance that assumes all ratings are due to random responding

[8] In order to calculate ICC(1) values, the notation of McGraw and Wong (1996) is adopted as follows:

$$\text{ICC(1)} = \frac{MS_R - MS_W}{MS_R + (K-1)MS_W}$$

K = the number of raters or judges ranging from k=1 to K
MS_R = the between-group variance
MS_W = the within-group variance

[9] ICC(2) is estimated using the notation of Glick and Roberts (1984) as follows:

$$\text{ICC(2)} = \frac{MS_R - MS_W}{MS_R}$$

MS_R = the between-group variance
MS_W = the within-group variance

variability in individual ratings of distributive justice was related to group membership. Although these ICC(1) values are below 0.12, which is traditionally considered to be the cutoff value, aggregate-level measures may reflect a reliable rating of the group mean, as long as the ICC(1) is above zero (Bliese, 2000). Additionally, (Kenny & LaVoie, 1985) suggested that researchers can justify aggregation of individual-level measures as organizational climate within units when ICC(1) is greater than zero with a corresponding significant ANOVA test statistic (F).

The results of the ICC(2) for four dimensions of organizational justice climate range from 0.93 to 0.97 in both FEVS 2010 and 2011. Generally speaking, scholars have found that an appropriate ICC(2) score is above 0.60 (Glick, 1985; Ostroff & Schmitt, 1993). However, Kozlowski and Klein (2000) pointed out that there are no specific cutoffs for ICC(2); only rules of thumb. Indeed, cutoffs for ICC(2) vary from 0.50 to 0.70 in organizational literature (Bliese, 2000; Klein & Kozlowski, 2000).

Finally, the results indicate that the r_{wg} index for four dimensions of organizational justice climate ranges from 0.50 to 0.67. As a common rule of thumb, an r_{wg} index greater than 0.70 is traditionally considered to justify aggregation (Dickson, Resick, & Hanges, 2006; James et al., 2008). However, recent years have seen many scholars assert that lower levels of agreement among raters are also acceptable for data aggregation (Liao & Rupp, 2005; Tucker, 2007; Walumbwa, Avolio, et al., 2008). For instance, LeBreton and Senter (2007) provided an inclusive set of guidelines for interpreting agreement. Under their guidelines, researchers can consider inter-rater agreement with respect to: "lack of agreement", 0.00 to 0.30; "weak agreement", 0.31 to 0.50; "moderate agreement", 0.51 to 0.70; "strong agreement", 0.71 to 0.90; and "very strong agreement", 0.91 to 1.00 (LeBreton & Senter, 2007).

Taken together, the body of evidence justifies the aggregation individual perceptions of justice as justice climate at the organizational level.

Generalized Estimating Equations (GEE)

As the availability of panel data has increased in public administration, a body of empirical research has used a variety of panel models: the fixed effects models (R. Andrews & Johnston Miller, 2013; Llorens, Wenger, & Kellough, 2008); the random effects model (Walker, Avellaneda, & Berry, 2011; Walker, Brewer, Boyne, & Avellaneda, 2011); generalized method of moments (Salge & Vera, 2012); and feasible generalized least squares (S.-Y. Lee & Whitford, 2013) to examine complex associations among variables, such as the interaction time and spatial units. The main advantage of longitudinal studies, in particular, is to provide more accurate inferences of model parameters by tracking spatial units over time, rather than cross sectional data with T=1 or time series with N=1 (Hsiao, 2014).

Many public administration scholars have recently used general estimating equations (GEE) for the longitudinal data analysis (Bowman & Parsons, 2013; Daley, Haider-Markel, & Whitford, 2007; Hicklin, 2007; Koo, Yoon, Hwang, & Barnerjee, 2013; Warner & Hefetz, 2008; Whitford, 2002b; Whitford & Yates, 2003; Woods, 2013; Yates & Whitford, 2009). The GEE method represents an extension of generalized linear models to account for correlated data (Ballinger, 2004). Let us suppose longitudinal data consists of K subjects (i=1, 2, … K), n_i observations, and the dependent variable Y_{ij} (j=1, 2, …, n_i). The response vector for subject i denotes $Y_i = (Y_{i1}, Y_{i2}, ..., Y_{in_i})'$ with the mean vector noted $\mu_i = (\mu_{i1}, \mu_{i2,} ..., \mu_{in_i})'$, whereas the associated covariates denotes X_{ij}. The link function noted by g(.) connects Y_{ij} and X_{ij}. Members

of the link function include the identity for Gaussian data, the logarithm for counted data and the

logit for binomial data, and the logit for binary data. The model is written as follows:

$$g(\mu_{ij}) = X'_{ij}\beta$$

where β is an unknown $p \times 1$ vector of parameters.

The GEE also uses the variance of Y_{ij} is specified as $v(\mu_{ij})\phi$, where v is a known variance

function of μ_{ij} and ϕ (a dispersion parameter) depending on the distributions of outcomes. For

instance, if Y_{ij} is counted measures, $v(\mu_{ij})$ is μ_{ij} and ϕ is 1. The covariance matrix (V_i) of Y_i is

assumed to have the form of $\emptyset A_i^{\frac{1}{2}} R_i(\alpha) A_i^{\frac{1}{2}}$, in which $A_i = Diag\{v(\mu_{i1}), \dots v(\mu_{in})\}$ and $R_i(\alpha)$ is

the working correlations structure composed of a vector of association parameters denoted by α

and $n_i \times n_i$ matrix. As a result, the estimate of β is obtained by solving the following unbiased

estimating equation:

$$U(\beta) = \sum_{i=1}^{K} \frac{\partial \mu_i}{\partial \beta} \emptyset A_i^{\frac{1}{2}} R_i(\alpha) A_i^{\frac{1}{2}} (Y_i - \mu_i) = 0$$

Despite the greater capacity of panel data analysis for capturing a portrait for causal

process, model choices depend on different data structures and substantive considerations (Zhu,

2013). In this study, I use generalized estimating equations (GEE) for several reasons. First of all,

the dataset consists of pooled observations from the subagencies in the U.S. federal government

for the time period between 2010 and 2014. Given the panel structure of the data covering

repeated measurements for the same unit of observations, the GEE method allows to investigate

the effects of various contextual factors on four types of organizational justice climate in federal

agencies over a series of years. Second, compared to fixed-and random-effects models, GEE

estimates provide more consistent and robust parameters when autocorrelation exists because of

non-independence (Zeger & Liang, 1986). To be specific, the working correlation matrix ($R_i(\alpha)$)

allows GEE to account for serially-correlated errors deriving from repeated observations over

time (Whitford, 2002a). The main advantage of $R_i(\alpha)$ is to estimate β more efficiently (Pan,

2001). Among several forms of $R_i(\alpha)$[10], I use the first-order autoregressive (AR(1)) that is

assumed to be Corr(Y_{ij}, Y_{ij+m})=α^m (m=0, 1, …, $n_i - j$). When the repeated observations are

collected at different time points, this correlation structure is useful in accounting for time

information (Ghisletta & Spini, 2004). Finally, GEE estimation is appropriate for the chief

interest of this study that explores the averaged effect of unit changes in the predictors for the

whole population. Zhu (2013, p. 423) noted that GEE, as an alternative panel data approach that

is flexible in diverse constraints, would be suitable "if the substantive question concerns inferring

average groups effects instead of unit-specific effects." As opposed to subject-specific

techniques (e.g., fixed-effects and random-effects models), GEE is a population-averaged

technique that includes the within-panel dependence by averaging effects over all panels (Hardin

& Hilbe, 2003). The main purpose of the regression equation is to estimate the marginal

expectations and not intracluster correlation structure (Ghisletta & Spini, 2004). For instance,

when comparing a group of graduate students subject to the introduction of online courses with a

control group on an academic performance indicator over a certain period time, the focus is the

average odds ratios of the two groups, but individuals' odds ratio. This leads to different

interpretation between the subject-specific and population-averaged technique. While subject-

specific parameters indicate the effect of a unit change in the predictors for all observations

---

[10] The correlation structures for GEE include exchangeable structure (i.e., all correlations are assumed to be identical); unstructured structure (i.e., all correlations are assumed to be different); and independent structure (i.e., all correlations are in the form of identity matrix which has one on the main diagonal and zeros elsewhere) (Hardin & Hilbe, 2003).

sharing the same covariates, population-averaged parameters represent the averaged effect of a

unit change in the predictors across the population (Ballinger, 2004; Ghisletta & Spini, 2004;

Zeger, Liang, & Albert, 1988; Zorn, 2001).

Table 4. Summary of Index Reliability Statistics (Cronbach's alpha by year)

Variable	2010	2011	2012	2013	2014
Distributive justice	0.84	0.83	0.83	0.83	0.84
Procedural justice	0.82	0.82	0.82	0.83	0.83
Informational justice	0.87	0.86	0.87	0.87	0.87
Interpersonal justice	0.92	0.92	0.92	0.92	0.92
Supervisory trust	0.81	0.81	0.80	0.80	0.80
Perceived decentralization	0.77	0.77	0.78	0.78	0.79
Job satisfaction	0.78	0.77	0.77	0.76	0.78
Affective commitment	0.79	0.79	0.79	0.79	0.79

N=81 subagencies

Figure 6. Confirmatory Factor Analysis, Organizational Justice (2010)
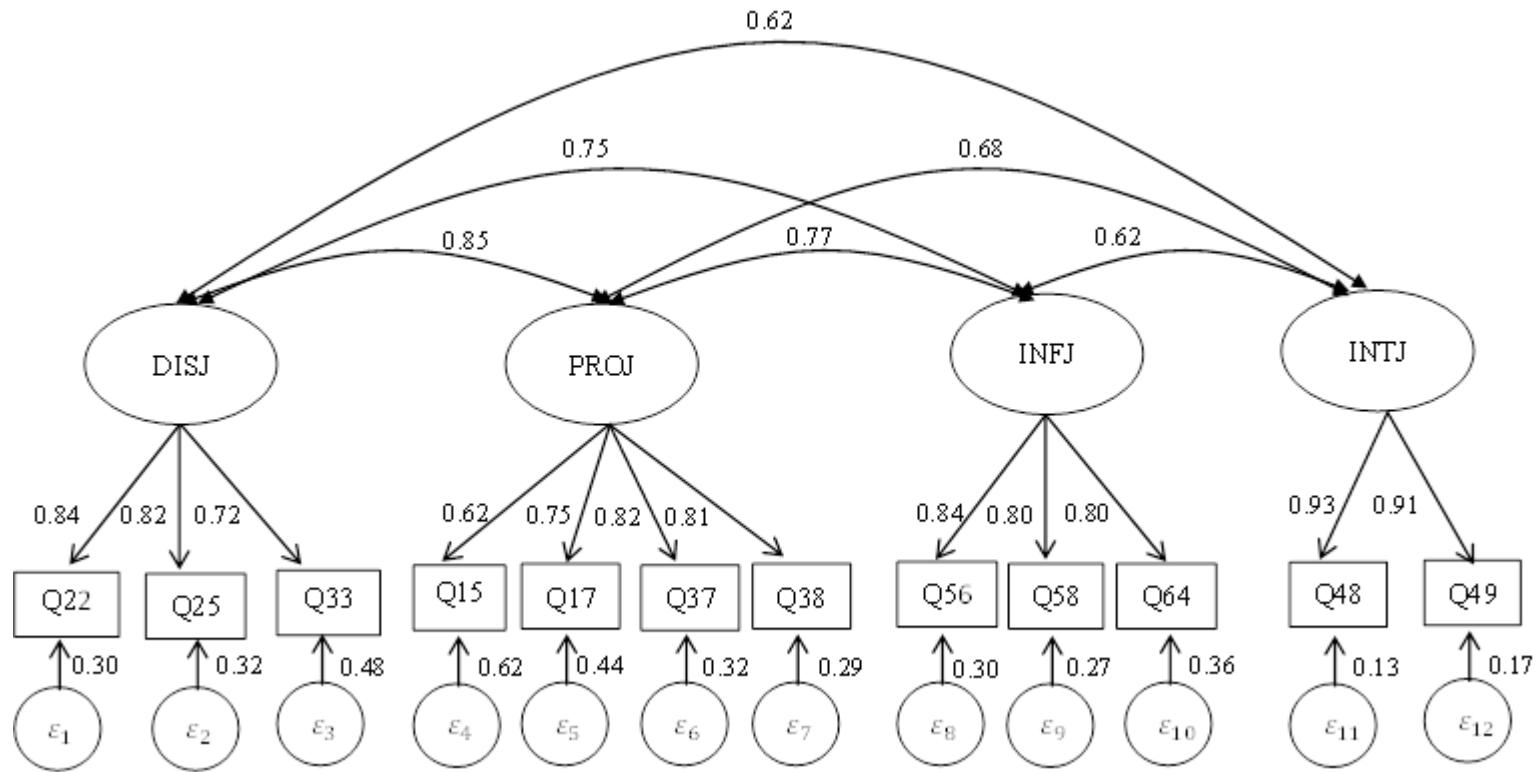
Year	Structure	χ^2	df	CFI	TLI	SRMR	RMSEA
2010	1-factor	311242.49	54	0.798	0.753	0.064	0.170
	2-factor	268911.99	53	0.826	0.783	0.058	0.160
	3-factor	221293.20	51	0.857	0.814	0.056	0.148
	4-factor	47011.736	48	0.970	0.958	0.034	0.070

Note: DISJ=Distributive justice ; PROJ=Procedural justice' INFJ=Informational justice; INTJ=Interpersonal justice

Figure 7. Confirmatory Factor Analysis, Organizational Justice (2011)
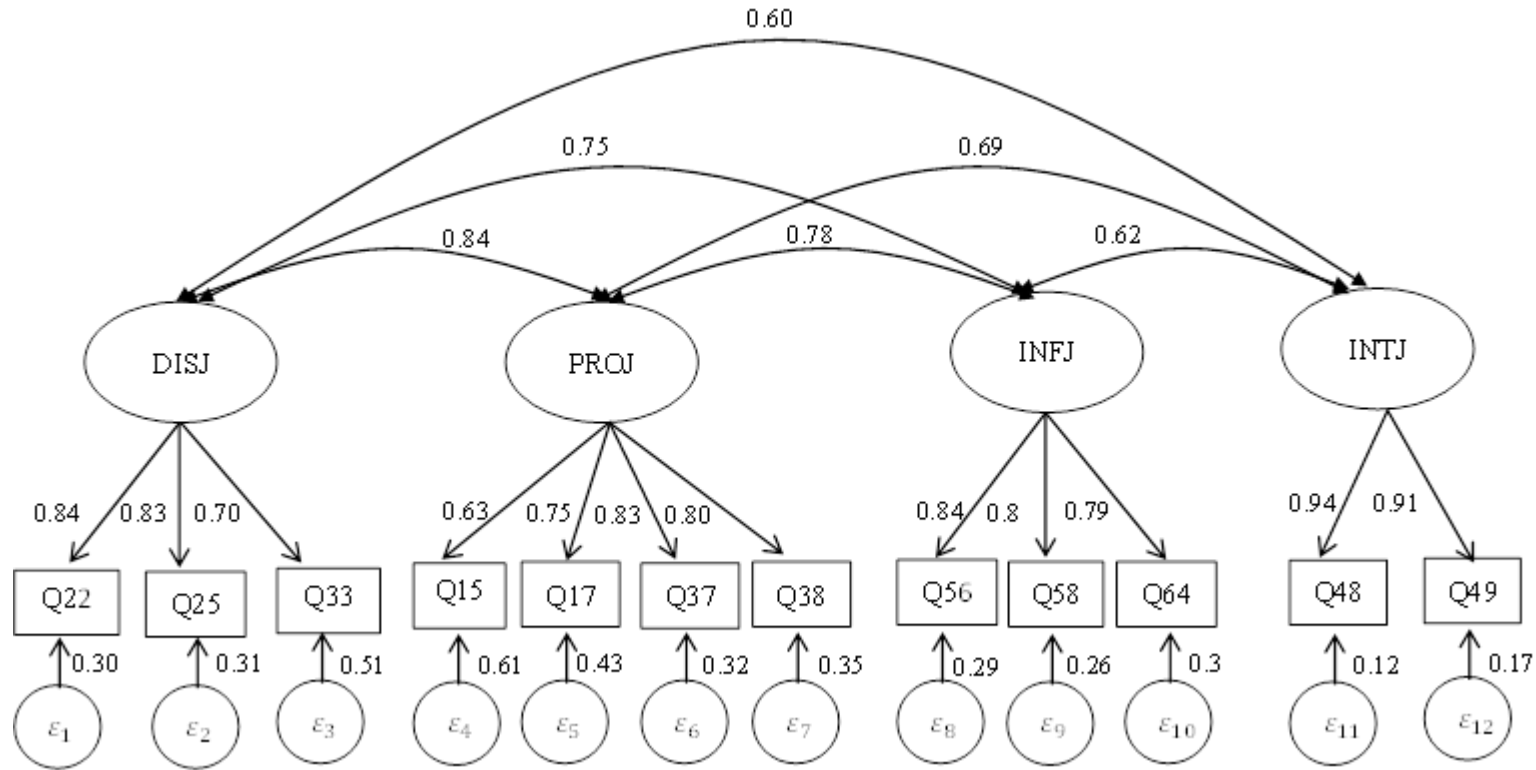
Year	Structure	χ^2	df	CFI	TLI	SRMR	RMSEA
2011	1-factor	311242.49	54	0.798	0.753	0.064	0.170
	2-factor	268911.99	53	0.826	0.783	0.058	0.160
	3-factor	221293.20	51	0.857	0.814	0.056	0.148
	4-factor	43972.929	48	0.97	0.960	0.032	0.068

Note: DISJ=Distributive justice ; PROJ=Procedural justice' INFJ=Informational justice; INTJ=Interpersonal justice

Figure 8. Confirmatory Factor Analysis, Organizational Justice (2012)
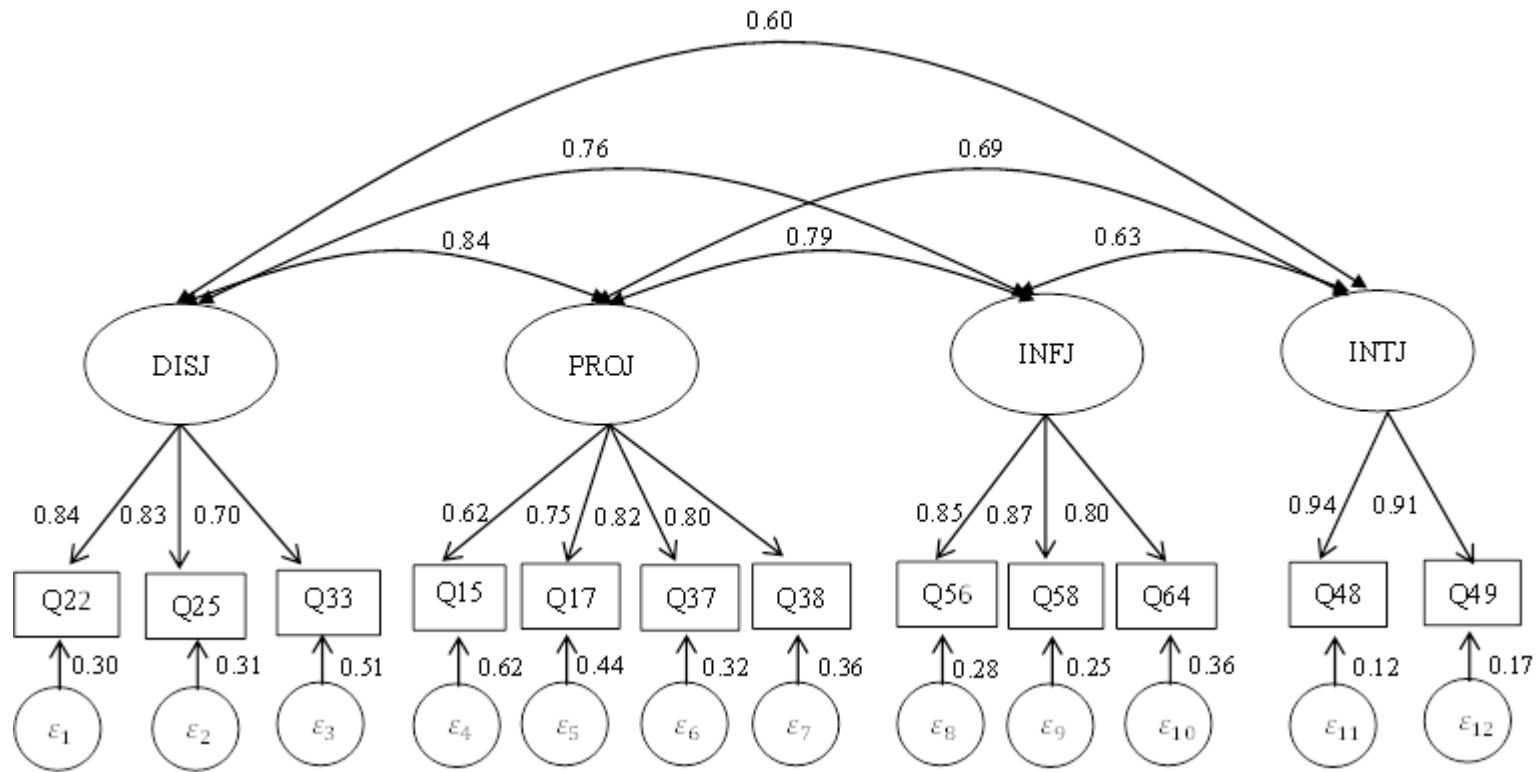
Year	Structure	χ^2	df	CFI	TLI	SRMR	RMSEA
2012	1-factor	311242.49	54	0.798	0.753	0.064	0.170
	2-factor	268911.99	53	0.826	0.783	0.058	0.160
	3-factor	221293.20	51	0.857	0.814	0.056	0.148
	4-factor	108357.737	48	0.972	0.962	0.031	0.067

Note: DISJ=Distributive justice ; PROJ=Procedural justice' INFJ=Informational justice; INTJ=Interpersonal justice

Figure 9. Confirmatory Factor Analysis, Organizational Justice (2013)
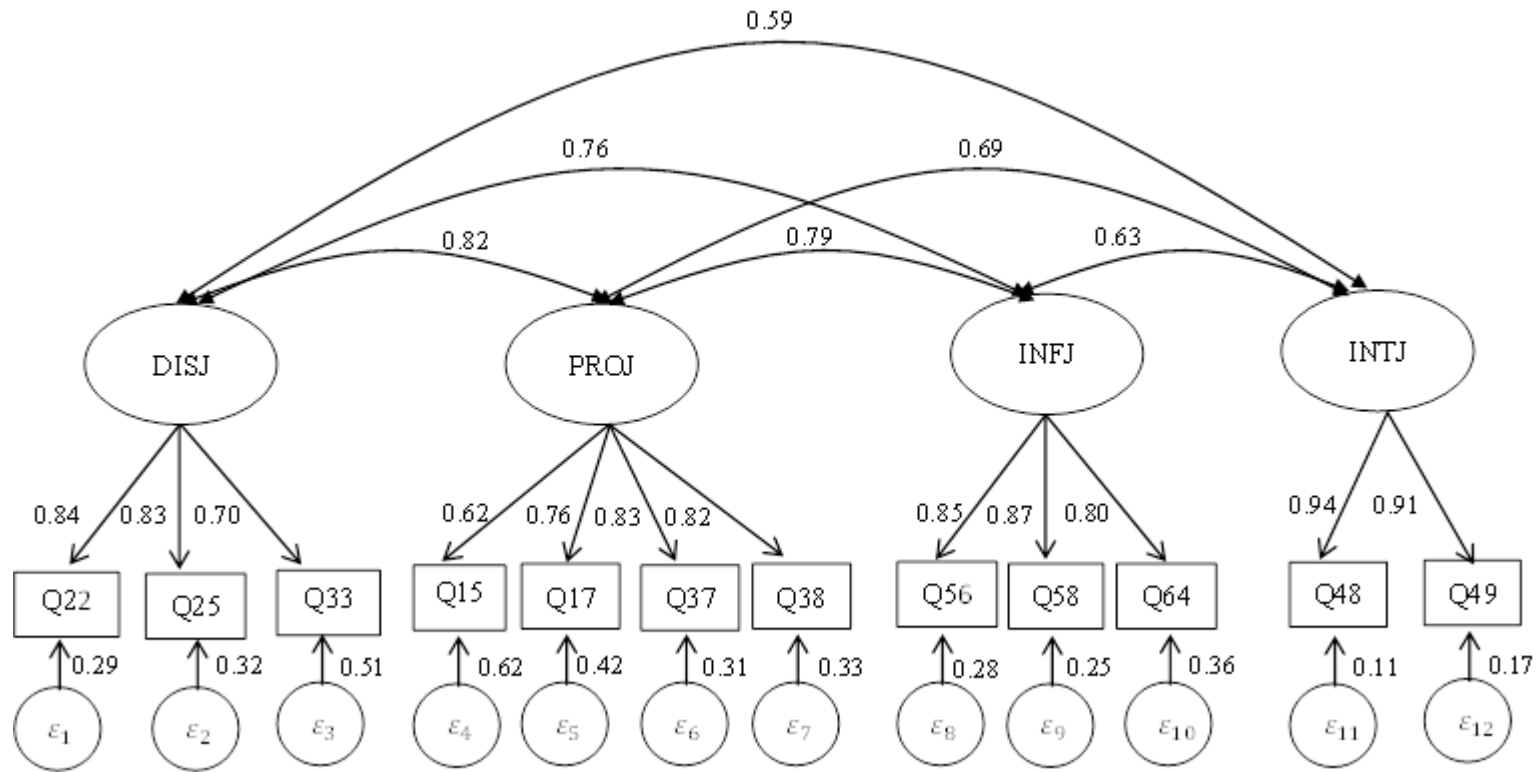
Year	Structure	χ^2	df	CFI	TLI	SRMR	RMSEA
2013	1-factor	311242.49	54	0.798	0.753	0.064	0.170
	2-factor	268911.99	53	0.826	0.783	0.058	0.160
	3-factor	221293.20	51	0.857	0.814	0.056	0.148
	4-factor	60874.996	48	0.971	0.960	0.033	0.069

Note: DISJ=Distributive justice ; PROJ=Procedural justice' INFJ=Informational justice; INTJ=Interpersonal justice

Figure 10. Confirmatory Factor Analysis, Organizational Justice (2014)
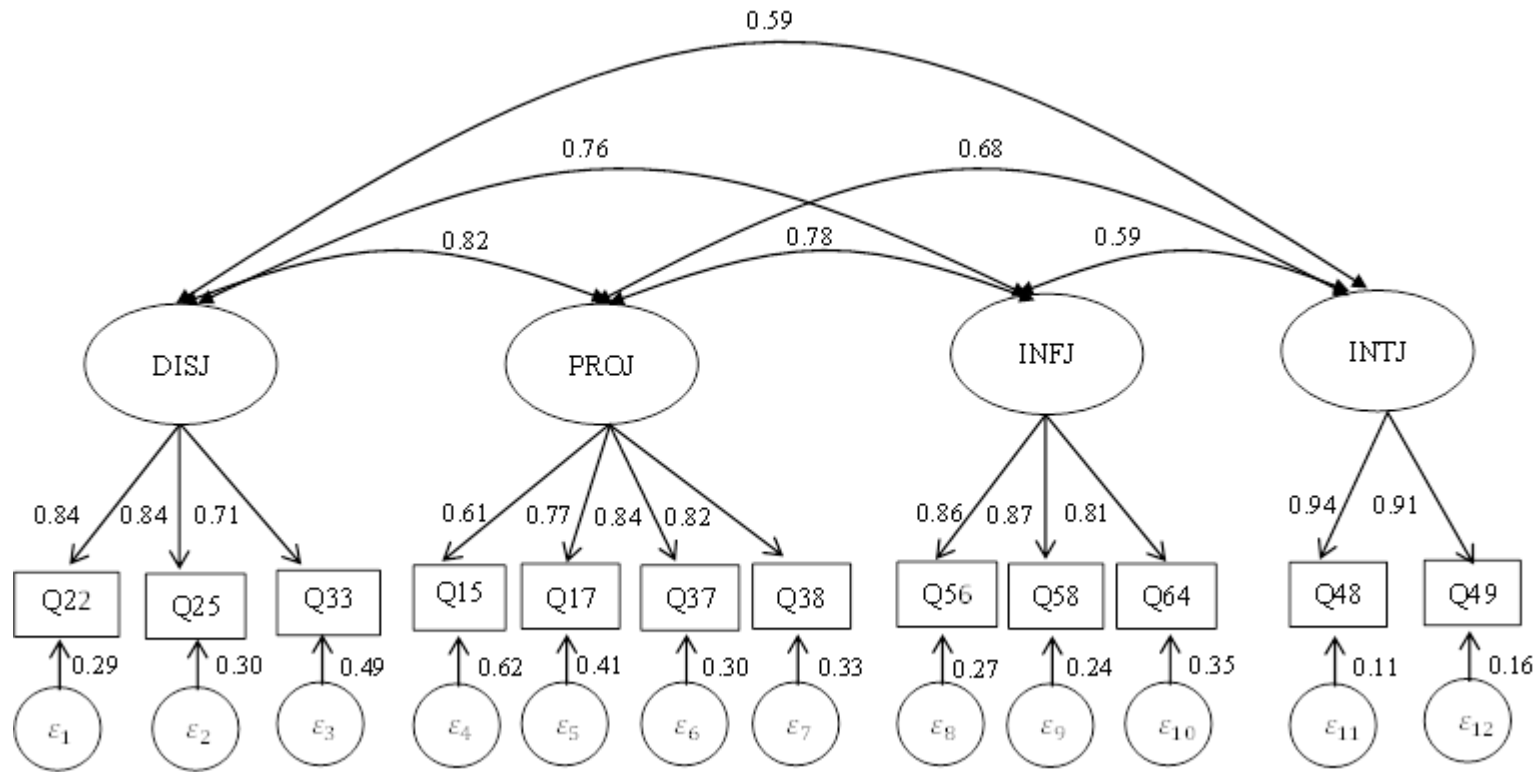
Year	Structure	χ^2	df	CFI	TLI	SRMR	RMSEA
2014	1-factor	311242.49	54	0.798	0.753	0.064	0.170
	2-factor	268911.99	53	0.826	0.783	0.058	0.160
	3-factor	221293.20	51	0.857	0.814	0.056	0.148
	4-factor	65778.325	48	0.970	0.959	0.034	0.071

Note: DISJ=Distributive justice ; PROJ=Procedural justice' INFJ=Informational justice; INTJ=Interpersonal justice

Table 5. Aggregation statistics to subagency level by year

| Year	Variable	F	ICC(1)	ICC(2)	Rwg(avg)
2010	Distributive justice climate	80.36**	0.05	0.98	0.55
	Procedural justice climate	66.38**	0.04	0.98	0.65
	Informational justice climate	82.99**	0.04	0.99	0.66
	Interpersonal justice climate	38.88**	0.02	0.97	0.64
	Collective perceptions of decentralization	32.75**	0.03	0.97	0.57
	Collective supervisory trust	31.62**	0.03	0.97	0.58
	Collective job satisfaction	23.84**	0.02	0.96	0.58
	Collective affective commitment	24.82**	0.03	0.96	0.76
2011	Distributive justice climate	40.82**	0.04	0.98	0.55
	Procedural justice climate	31.62**	0.03	0.97	0.67
	Informational justice climate	33.86**	0.03	0.97	0.67
	Interpersonal justice climate	17.87**	0.02	0.94	0.66
	Collective perceptions of decentralization	31.83**	0.03	0.97	0.58
	Collective supervisory trust	31.87**	0.03	0.97	0.6
	Collective job satisfaction	26.47**	0.02	0.96	0.57
	Collective affective commitment	24.62**	0.03	0.96	0.76
2012	Distributive justice climate	181.77**	0.06	0.99	0.54
	Procedural justice climate	142.00**	0.05	0.99	0.64
	Informational justice climate	134.67**	0.04	0.99	0.64
	Interpersonal justice climate	60.65**	0.02	0.98	0.63
	Collective perceptions of decentralization	128.12**	0.04	0.99	0.55
	Collective supervisory trust	112.48**	0.03	0.99	0.57
	Collective job satisfaction	115.67**	0.03	0.99	0.56
	Collective affective commitment	86.99**	0.03	0.99	0.75
2013	Distributive justice climate	80.36**	0.05	0.99	0.53
	Procedural justice climate	66.38**	0.04	0.98	0.60
	Informational justice climate	82.99**	0.04	0.99	0.61
	Interpersonal justice climate	38.88**	0.02	0.97	0.62
	Collective perceptions of decentralization	73.45**	0.04	0.99	0.52
	Collective supervisory trust	68.71**	0.04	0.99	0.58
	Collective job satisfaction	69.11**	0.04	0.99	0.62
	Collective affective commitment	62.83**	0.03	0.98	0.74
2014	Distributive justice climate	126.65**	0.06	0.99	0.51
	Procedural justice climate	101.65**	0.05	0.99	0.61
	Informational justice climate	120.01**	0.06	0.99	0.60
	Interpersonal justice climate	52.26**	0.02	0.98	0.62
	Collective perceptions of decentralization	109.10**	0.05	0.99	0.56
	Collective supervisory trust	106.48**	0.05	0.99	0.53
	Collective job satisfaction	100.41**	0.04	0.99	0.62
	Collective affective commitment	99.27**	0.04	0.99	0.73

N=81 subagencies

CHAPTER 6

ANALYSIS OF ORGANIZATIONAL ATTRIBUTES AND JUSTICE CLIMATE

In this chapter, I analyze the relationships between the two organizational attributes - supervisory trust and perceptions of decentralized structure - and four types of justice climate. Furthermore, I performed impact analysis on the two attributes in order to explore their differential effects on justice climate formulation.

First, I begin by describing model specification including data, measures, and estimation method. Then, I report descriptive statistics and correlation matrixes, box plots showing the distributions of justice climate, and the results of empirical analyses. Finally, the findings are discussed in the context of the hypotheses formulated in Chapter 3.

Data and Method

To test the hypotheses, this study presents an analysis of U.S. federal government agencies. It utilizes a five year-consecutive FEVS and the EHRI-SDM (from 2010-2011). Using the data sources, I created four types of organizational justice climate and organizational attributes, reported in Chapter 4. All variables, measured by multiple measurements, have an acceptable Cronbach's alpha value and met the criteria for aggregation. As such, the unit of analysis is a federal subagency-year. Given that the final dataset consists of panel data, the models are estimated using the GEE. In theory, panel data is vulnerable to unobservable

heterogeneiety and serial correlation (Whitford & Tucker, 2009). The GEE method, however, generates efficient and unbiased parameter estimates because it allows specification of a working correlation structure that corrects for correlation within subjects or panels (Whitford & Yates, 2003). I assume first-order autocorrelation (AR(1)) to consider serial correlation and estimate robust standard errors to adjust heteroskedasticity.

For improved model specification, I controlled for factors that may influence justice climates in the extant literature. First, with respect to differences in how minority and nonminority group employees view different dimensions of justice, the personal relative deprivation theory suggests that female and racial minority employees are more likely to place emphasis on procedural justice rather than distributive justice. For instance, the theory specifies that minority employees (i.e., female or racial minority employees) generally have a disadvantaged status and lower wages compared to non-minority employees in the workplace (Crosby, 1982; Foley et al., 2005). Hence, they use other female or black co-workers as their social comparison group and thus have lower expectations for organizational outcomes (e.g., salary and promotion) than male and white workers. This raises the possibility that female and racial minority employees tend to focus more on fair decision-making procedures than balance between input and output (Simpson & Kaminski, 2007).

Second, the literature suggests that there are differences in perceptions of procedural fairness depending on supervisory status. Rubin and Chiqués (2015), for example, found that supervisors have higher perceptions of procedural fairness than front-line employees in federal agencies because they are subject to a performance appraisal system. Third, researchers suggested that workforce size is likely to predict justice perceptions (Rupp & Aquino, 2009; Schminke et al., 2000). Schminke et al. (2000) asserted that the increase in size of an

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organization may undermine social integration among employees and increase a sense of alienation (Kanungo, 1982). Weakened social relationships and reduced personal contact lead to the treatment of employees with less courtesy and respect and lack of information sharing. Organizational size, in addition, may influence justice judgment formation through organizational politics. Specifically, larger organizations have to deal with the multiple needs of various interest groups, which promote political activity. Cropanzano, Howes, Grandey, and Toth (1997) suggested that the political activity pervasive in large organizations encourages authority figures to build less transparent and less predictable outcome distribution and allocation procedures. Finally, I included lagged dependent variables to control for the association between the past and present justice climates (Oberfield, 2014).

Findings

Distributions of Justice Climate by agency 2010-2014

The distributions of the four types of justice climate are presented in a set of figures (Figure 11 to 14) for 81 subagencies, from 2010 to 2014. The lower and upper lines on the whisker indicate the minimum and maximum values of justice climate. The box displays the standard deviation of justice climate, whereas the line in the box presents the median justice climate. Also, the top of each box shows the justice climate values in the 75th percentile, while the bottom of each box depicts the justice climate values in the 25th percentile.

With respect to the distribution of distributive justice climate, the box plots in Figure 11 demonstrate a substantial downward trend, on the whole. Unlike the distributive justice climate, the medians of procedural justice climate appear to maintain remarkable stability in Figure 12. As can be seen, Figure 13 display that the medians of informational justice climate move slightly

downward until reaching a low in 2014, whereas Figure 14 shows that the medians of interpersonal justice are stable until 2013, but move upward in 2014.

Figures 15 to 18 show agency-by-agency estimates of justice climate. Overall, it appears that different levels of variation exist across agencies depending on types of justice climate. For instance, the vast majority of agencies fall between 2.5 and 3 in the distributive justice climate (see Figure 15); 3.5 and 4.0 in the procedural justice climate (see Figure 16); 3 and 3.5 in the informational justice climate (see Figure 17); and 4 and 4.5 in the interpersonal justice climate (see Figure 18). Interestingly, the Figures display large differences in justice climates by subagencies. For example, many subagencies of the Department of Homeland Security, including Transportation security administration and Immigration and Customs Enforcement, have lower median values of justice climates, whereas subagenices of National Aeronautics and Space Administration, including Lyndon B. Johnson Space Center and George Marshall Space Flight Center, have high median values of each justice climate on the whole. In addition, the variation in justice climates is considerable with many subagencies such as U.S. Patent and Trademark Office, Centers for Medicare & Medicaid Services, and Customs and Border Protection.

Descriptive Statistics and Correlation Matrices

Table 6 displays descriptive statistics and correlation matrices for both the dependent and independent variables employed in this study. While interpersonal justice climate has the highest mean value (4.029), distributive justice climate has the lowest mean value (2.844) among four dimensions of justice climate. Regarding the zero-order correlation among variables, a strong positive relationship between supervisory trust and perceived decentralization is detected. Because of the possibility of a multicollinearity problem, I performed the variance inflation

factors (VIFs) for each explanatory variable. Results show that the perceived decentralization has the highest VIF (7.40) and supervisory trust shows the second highest VIF (7.01). The average VIF score for the independent variables is about 2.94. Given that the maximum acceptable threshold of VIF is 10.0 (Kennedy, 2008), these variables do not cause severe muticollinearity enough to considerably affect the standard errors.

GEE Regression Results

Table 7 presents GEE estimates of the coefficients for the four types of organizational justice climate. Wald χ^2 statistics in the four models demonstrate that the models fit the data well.

First of all, H1a through H1d predicted the positive effect of employees' collective supervisory trust on the four types of organizational justice climate. As predicted, the results of model 1 through 4 show that supervisory trust has a significant and positive relationship with distributive ($\beta=0.380$, $p<0.01$); procedural ($\beta=0.422$, $p<0.001$); informational ($\beta=0.529$, $p<0.001$); and interpersonal justice climate ($\beta=0.418$, $p<0.001$) in support of H1a, H1b, H1c, and H1d.

With respect to H2a through H2d, I proposed that perceived decentralization has a positive impact on justice climate. The results that model 1 to 4 revealed were that an increase in aggregated perceptions of decentralized structure are associated with improvements in distributive ($\beta=0.522$, $p<0.001$); procedural ($\beta=0.324$, $p<0.001$); informational ($\beta=0.428$, $p<0.001$); and interpersonal justice climate ($\beta=0.152$, $p<0.05$). In all, these findings suggest that decentralized structure is a strong predictor of promoting the four dimensions of justice climate at the organizational level.

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The results also indicated that control variables significantly influence collective perceptions of organizational justice. For instance, the female employee rate has a negative impact on the procedural justice climate, but a positive impact on informational justice climate. On the other hand, the minority employee rate is negatively related to the three dimensions of justice climate: distributive, informational, and interpersonal. In terms of the relationships between the supervisory status and justice climates, the results present that the supervisor rate has a negative effect on the distributive and procedural justice climate. Finally, workforce size is another predictor of lowering justice climates. The results in models 1, 2, and 4 show that size is negatively associated with the distributive, procedural, and interpersonal justice climate.

Impact Analysis

This study estimated the relative impact of significant justice climate on the dependent variable in each model in order to compare how they differently contribute to the work-related outcomes. Following the method that (S.-Y. Lee & Whitford, 2013) conducted, I calculated the differences between a marginal effect of the independent variable at its mean and at one standard deviation above the mean. The differences in the two predicted values at each level were interpreted with respect to standard deviation in the dependent variable. Table 8 provides the results of the impact analysis.

First, building on a multifoci approach, H3 proposed that perceived decentralization is more strongly associated with system-referenced justice climates (distributive and procedural) than supervisory trust. The results show that the impact of a 1 standard deviation increase in shared perceptions of decentralized structure is a 0.415 standard deviation increase in a distributive justice climate, which is a stronger impact than supervisory trust; the impact of a 1 standard deviation increase in employees' collective supervisory trust is a 0.300 standard

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deviation increase in a distributive justice climate. However, the results present that while a 1 standard deviation increase in supervisory trust leads to a 0.438 standard deviation increase in procedural justice climate, the impact of a 1 standard deviation increase in perceived decentralization results in a 0.338 increase in procedural justice climate. Thus, findings partially support H3.

H4 posits that supervisory trust has a stronger positive impact on supervisor-referenced justice climates (informational and interpersonal) than perceived decentralization. The results indicate that the impact of a 1 standard deviation increase in supervisory trust is a 0.497 increase in informational justice, but perceived decentralization is a 0.395 standard deviation increase. Moreover, the leverage of supervisory trust appears to be larger than that of perceived decentralization in predicting an interpersonal justice climate. The impact of 1 standard deviation increase in trust yields a 0.560 standard deviation increase in interactional justice, whereas the impact of a 1 standard deviation increase in decentralization perception leads to a 0.204 standard deviation increase. Hence, H4 is supported by the results.

Discussion

This study aims to examine the main differential effects of the two organizational attributes on the four dimensions of justice climate at the federal agency level. Traditionally, organizational justice research has paid greater attention to an individual-level approach to investigating the phenomenon rather than an organizational-level approach (Schminke et al., 2000). One presupposition of the organizational-level research is that fairness-relevant events and decision-making often occur in an organizational context as a whole, and this context may influence collective perceptions of justice (Lind & Tyler, 1988). However, there appears to be a

lack of research in exploring antecedents to the development of shared perceptions of fairness within the organization. This omission is particularly surprising in that many scholars posited that the formation of justice perceptions depends on how to structure organizational contexts (Ambrose & Schminke, 2003; Greenberg, 1993; Keele & Kelly, 2006). In response to the call for exploring the link between perceptions of justice and contextual factors of the organization in which those judgments are made (Ambrose, 2002; Ambrose & Schminke, 2003), this study investigates the relationships between a variety of organizational attributes and four types of justice climate at the organizational level.

In this chapter, I tested whether supervisory trust and perceived decentralization in federal agencies would affect shared perceptions of distributive, procedural, informational, and interpersonal justice. Empirical evidence is very encouraging. First, employees' collective trust in a supervisor is positively related to all dimensions of an organizational justice climate. Such results are consistent with the findings of previous research at an individual level of analysis (Brashear et al., 2005; Colquitt & Rodell, 2011; Kickul et al., 2005; Rosier et al., 2010; Zapata-Phelan, Colquitt, Scott, & Livingston, 2009). Building on FHT, it is conceivable that collective trust in leadership lessens subordinates' uncertainty about whether they are exploited by others, especially under a situation in which there is a lack of information regarding fair treatment, which in turn results in higher employees' shared perceptions of justice within the agency. This discovery seems to indicate that collective supervisors have to be trusted to decide and perform in ways that subordinates with whom they are managing in order to enhance justice climates within the organization.

Second, consistent with the findings of previous studies (Ramaswami & Singh, 2003; Zhang & Agarwal, 2009), the results revealed that perceptions of decentralized structures,

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including participation in decision-making and empowerment practice, have the positive impact on the four dimensions of justice climate. It is plausible that perceived decentralization allow collective employees to have assurance that they are fairly treated with respect to distribution of extrinsic rewards to which they are entitled (Zhang & Agarwal, 2009). Also, it is conceivable that decentralization of power and participation in decision-making lead collective employees to feel that they receive quality of information about justice-relevant events and interpersonal treatment from their supervisors (Lind & Tyler, 1988; Schminke et al., 2000; Schminke et al., 2002).

Finally, regarding differential effects, this study partially supports the multifoci model suggesting that differential effects of the organizational attributes depend on the sources of justice judgment (i.e., organization and supervisors). That is, the findings show that perceived decentralization is more influential for a distributive justice climate than trust in a supervisor. In contrast, supervisory trust is more prominent for informational and interpersonal justice, and the procedural justice climate, than perceived decentralization. Recognizing that the two supervisor-oriented justice climates, informational and interpersonal justice, are separated from the procedural justice climate, one possible explanation might be that supervisory trust may have greater variance among collective federal employees, leading to consistently stronger relationships with a procedural justice climate than shared perceptions of decentralized structure.

Given that organizational determinants of shared perceptions of organizational justice are under-researched in previous studies, it is crucial to reflect on the overall meaning of these findings. That is, potential influences of collective trust in supervisors and collective perceptions in decentralized settings could serve to foster the four dimensions of justice climates within federal agencies.

Figure 11. Distribution of Distributive Justice Climate, 2010-2014

excludes outside values
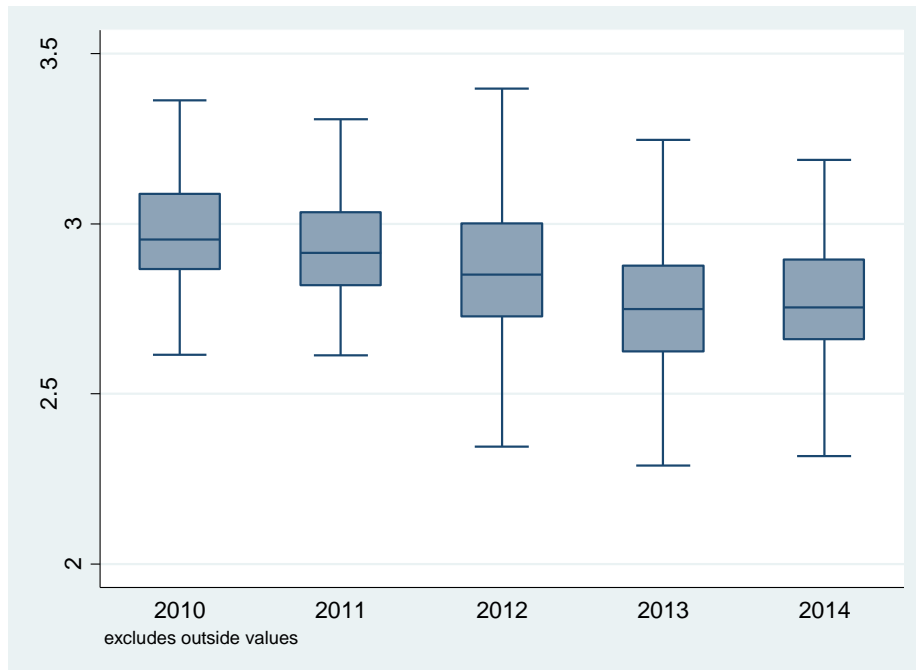
Figure 12. Distribution of Procedural Justice Climate, 2010-2014

excludes outside values
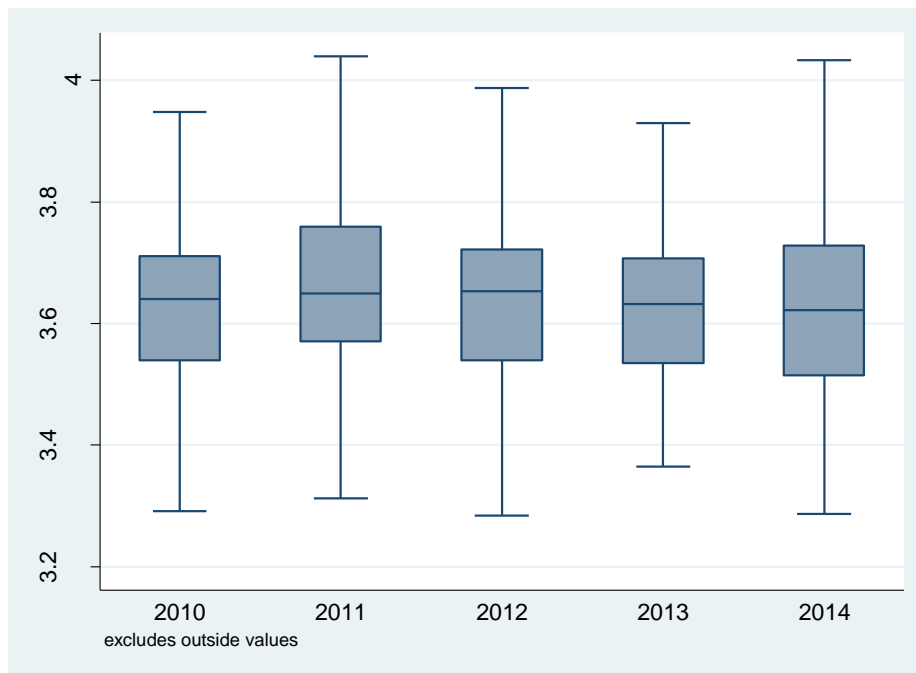
Figure 13. Distribution of Informational Justice Climate, 2010-2014

excludes outside values
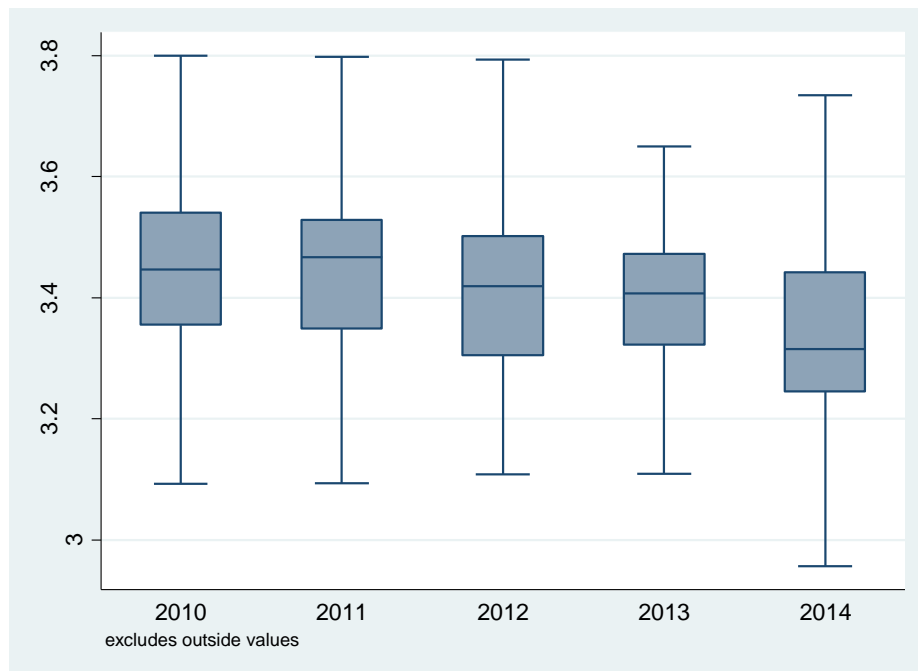
Figure 14. Distribution of Interpersonal Justice Climate, 2010-2014

excludes outside values
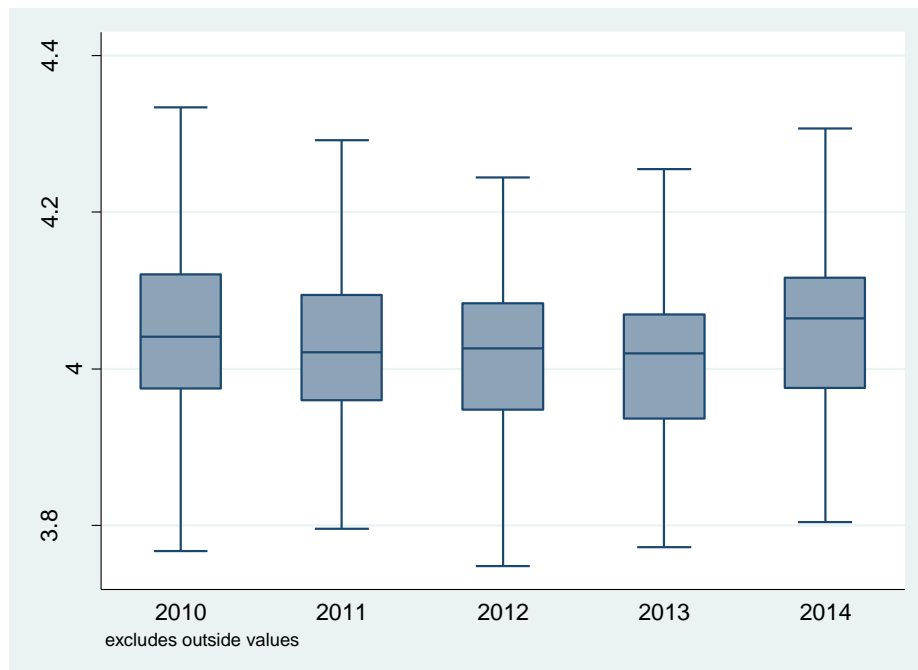
Figure 15: Distribution of Distributive Justice Climate by Subagency 2010-2014

Figure 16. Distribution of Procedural Justice Climate by Subagency 2010-2014

Figure 17. Distribution of Informational Justice Climate by Subagency 2010-2014

Immigration and Customs Enforcement
Transportation Security Administration
Bureaus of Indian Affairs and Education
Forest Service
Federal Emergency Management Agency
U.S. Army Test and Evaluation Command
Indian Health Service
National Park Service
Customs and Border Protection
Alcohol, Tobacco, Firearms, and Explosives
U.S. Army NetCommand/9th Army Signal Command
U.S. Army Intelligence and Security Command
National Oceanic and Atmospheric Administration
Rural Development
Farm Service Agency
Bureau of Reclamation
Bureau of Land Management
Agricultural Research Service
Secret Service
Commander, Navy Installations
U.S. Army Installation Management Agency
Veterans Health Administration
TRICARE Management Activity
U.S. Marshals Service
Veterans Benefits Administration
Missile Defense Agency
Office of the Secretary
Bureau of Prisons/Federal Prison System
Natural Resources Conservation Service
Space Command
U.S. Army Reserve Command
Citizenship and Immigration Services
Air Force Materiel Command
U.S. Army Medical Command
Immediate Office of the Chief of Naval Operations
Fish and Wildlife Service
HQDA Field Operating Agencies and Staff Support Agencies
Naval Facilities Engineering Command
Food and Drug Administration
U.S. Army Corps of Engineers
National Institute of Standards and Technology
Bureau of the Census
Defense Contract Management Agency
U.S. Atlantic Fleet, Commander in Chief
Naval Sea Systems Command
Assistant for Administration (Navy)
Air Education and Training Command
U.S. Army Training and Doctrine Command
Headquarters, Air Force Reserve
Bureau of Naval Personnel
Naval Medical Command
Naval Supply Systems Command
Food Safety and Inspection Service
.S. Pacific Fleet, Commander in Chief
Defense Information Systems Agency
Federal Bureau of Investigations
Pacific Air Forces
National Institutes of Health
Naval Air Systems Command
Defense Finance and Accounting Service
Coast Guard
Space and Naval Warfare Systems Command
Air Combat Command
Air Mobility Command
Bureau of Labor Statistics
Centers for Medicare & Medicaid Services
Executive Office U.S. Attorneys and U.S. Attorneys' Office
Defense Logistics Agency
U.S. Army Acquisition Support Center
U.S. Army Forces Command
John F. Kennedy Space Center
Public Buildings Service
Defense Contract Audit Agency
John Glenn Research Center
John F. Kennedy Space Center
Federal Highway Administration
Langley Research Center
John F. Kennedy Space Center
Goddard Space Flight Center
George C. Marshall Space Flight Center
U.S. Patent and Trademark Office

2.5   3   3.5   4
Informational justice climate

Figure 18. Distribution of Interpersonal Justice Climate by Subagency 2010-2014

Interpersonal justice climate

Table 6. Summary Statistics and Correlation Matrixes

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1 Distributive justice climate	2.84	0.24										
2 Procedural justice climate	3.64	0.18	0.77***									
3 Informational justice climate	3.40	0.20	0.79***	0.89***								
4 Interpersonal justice climate	4.03	0.14	0.72***	0.87***	0.80***							
5 Collective supervisory trust	3.49	0.19	0.80***	0.89***	0.95***	0.80***						
6 Collective perceptions of decentralization	3.30	0.19	0.79***	0.87***	0.92***	0.74***	0.92***					
7 Female employee rate	0.40	0.13	0.02	-0.17**	-0.02	-0.15**	-0.02	-0.12*				
8 Minority employee rate	0.31	0.12	-0.08	-0.34***	-0.18**	-0.44***	-0.13*	-0.16**	0.39***			
9 Supervisor rate	0.14	0.04	-0.28***	-0.15**	-0.15**	-0.11*	-0.11*	-0.11*	-0.25***	-0.06		
10 Leader rate	0.02	0.02	0.01	0.26***	0.29***	0.18**	0.24***	0.31***	-0.20***	-0.01†	-0.07	
11 Workforce size (log)	9.16	0.97	-0.38***	-0.42***	-0.34***	-0.45***	-0.382***	-0.38***	-0.01	0.12*	-0.15**	-0.03

Note: N=324; ***$p < .001$, **$p < .01$, *$p < .05$, †$p < .10$.

Table 7. GEE Population-Averaged Model Results

	Model 1 Distributive justice climate		Model 2 Procedural justice climate		Model 3 Informational justice climate		Model 4 Interpersonal justice climate	
	β	*SE*	*β*	*SE*	*β*	*SE*	*β*	*SE*
Collective supervisory trust	0.380 ***	0.11	0.422 ***	0.07	0.529 ***	0.07	0.418 ***	0.06
Collective perception of Decentralization	0.522 ***	0.10	0.324 ***	0.07	0.418 ***	0.07	0.152 *	0.06
Female employee rate	0.005	0.10	-0.120 *	0.06	0.093 *	0.06	-0.079	0.05
Minority employee rate	0.064	0.10	-0.172 ***	0.04	-0.106 *	0.04	-0.180 ***	0.05
Supervisor rate	-0.937 ***	0.20	-0.470 ***	0.13	-0.034	0.13	-0.144	0.13
Leader rate	-2.459 ***	0.58	-0.193	0.33	0.341	0.33	-0.547	0.43
Workforce size, log	-0.034 **	0.01	-0.019 ***	0.01	0.004	0.01	-0.029 *	0.01
Dependent variable, lag	0.122	0.09	0.082 *	0.04	0.038	0.04	-0.105	0.04
Constant	-0.096	0.38	1.166 ***	0.19	-0.006	0.19	2.922 ***	0.24
Observations	324		324		324		324	
Link Function	Identity		Identity		Identity		Identity	
Family	Gaussian		Gaussian		Gaussian		Gaussian	
Working Correlations Matrix	AR(1)		AR(1)		AR(1)		AR(1)	
Wald χ^2	4664.02 ***		3222.48 ***		1162.29 ***		817.98 ***	
Scale Parameter	0.011		0.003		0.003		0.005	

Note: SE= Robust Standard Error
***p < .001; **p < .01; *p < .05 †p < .10.

Table 8. Impact Analysis

	Distributive justice climate	Procedural justice climate	informational justice climate	Interpersonal justice climate
Collective supervisory trust	0.300	0.438	0.497	0.560
Collective perception of decentralization	0.415	0.338	0.395	0.204

CHAPTER 7

ANALYSIS OF JUSTICE CLIMATE AND WORK-RELATED OUTCOMES

Although considerable attention in public administration has been paid to the relationships between individual employees' justice perceptions of work attitudes and behavior, little research has explored the impact of justice climate - organizational-level cognition about how the organization (or group) as a whole is treated - on work-related outcomes. Building on the social exchange theory (SET), there is a good deal of research showing the positive impact of fairness perceptions on reciprocative attitudes and behavior at individual-level. In a parallel fashion, I propose that the organizational-level justice climate is also positively associated with organizational-level outcomes.

This chapter proceeds as follows: I begin with a brief discussion regarding the estimation approach and measures that are used to analyze the four dimensions of justice climate-organizational outcomes (i.e., job satisfaction, affective commitment, work quality, mission achievement, turnover intention, and turnover behavior)., I then report empirical findings from the models and conclude with a discussion of the findings in the context of the hypotheses formulated in Chapter 4.

Data and Method

In order to test the hypotheses formulated in Chapter 5, this study uses data extracted from the two major sources; a five year-consecutive FEVS and the EHRI-SDM (from 2010-

2014), both of which were published by the OPM. Thus, the unit of analysis is a federal

subagency-year. Using the data sources, six dependent variables were developed in Chapter 5:

the two types of work attitudes - job satisfaction and affective commitment; the two types of

subjective performance - work quality and mission achievement; and the two types of turnover -

turnover intention and behavior.

Given that the final dataset consists of panel data of federal subagency-year observations,

the GEE method was used to examine a set of four models. I assume first-order autocorrelation

(AR(1)) to consider serial correlation and estimate robust standard errors to adjust

heteroskedasticity.

For improved model specification, I control for a variety of organizational characteristics.

First, job-related resources have been known as a predictor of job satisfaction (Oberfield, 2014);

affective commitment (Moldogaziev & Silva, 2014); subjective organizational performance

(Fernandez & Moldogaziev, 2011; Jung & Lee, 2015); and turnover intention (Cho & Perry,

2012). It may be plausible to expect that providing sufficient resources leads employees to

increase in perceived organizational support and thus strengthen positive attitudes and behaviors

(Shore & Wayne, 1993). Second, the literature also provides empirical support for the view that

demographic diversity has a strong influence on a variety of work-related outcomes (Choi, 2009;

Choi & Rainey, 2014; Oberfield, 2014; Opstrup & Villadsen, 2015) . For this reason, it is

necessary to control gender, race, and age diversity within the subagencies. Blau's index has

been widely used as an ideal measure of diversity to estimate dissimilarities within a group of

employees (Harrison & Klein, 2007). The index was calculated as follows:

$$1 - \sum_{i=1}^{k} p_i^2$$

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where p_i denotes the proportion of the group in the respective diversity category and *i* is the number of different categories represented in the group. While a zero point of the index indicates complete homogeneity, 1 reflects complete heterogeneity. In other words, larger values of the index represent greater workgroup diversity. The proportion of females to males was used to measure gender diversity. For racial diversity, the index was calculated using five categories: White, Black, Hispanic, Asian/Pacific Islander, and Native Alaskan/American Indian. Finally, for age diversity, I categorized employees into four groups— under 29; 30–39; 40–49; 50–59; and over 60.

Third, the rates of three occupation types (i.e., professional, technical, and clerical) of personnel employed in an agency are included in the models (Oberfield, 2014).

Finally, the models in this study include lagged dependent variables to avoid omitted variable bias because they capture observed and unobserved variables from an earlier year (Oberfield, 2014). In public administration, a lagged dependent variable in panel datasets is commonly used to help correct for potential omitted factors that are time invariant (Keele & Kelly, 2006). Several scholars have suggested that models including lagged dependent variables as control variables allow each case to serve as its own control and thus result in more valid inference (R. Andrews & Boyne, 2012; Favero et al., 2016; Groeneveld & Verbeek, 2011; Oberfield, 2014).

Findings

Descriptive Statistics and Correlation Matrices

Table 9 displays the descriptive and correlation matrices for the variables used in the models. As evident from the table, the six dependent variables are found to be significantly

related to the independent variables. However, there are high correlation coefficients between the variables, resulting in a problem of multicollinearity. Thus, I performed the variance inflation factors (VIFs) for each explanatory variable. Results show that the average VIF was less than 3.64 and, in all cases, is well below the critical value of 10. This suggests that it is unlikely that the empirical results are seriously distorted by multicollinearity.

GEE Regression Results and Impact Analysis

Table 10 presents GEE estimates of the coefficients for the six types of work-related outcomes at the subagency level. Wald χ^2 statistics in the four models demonstrate that the models fit the data well.

H1a through H1d proposed that the four dimensions of justice climate are positively related to collective job satisfaction. The results in Model 1 show that distributive ($\beta=0.223$, $p<0.001$); informational ($\beta=0.304$, $p<0.001$); and interpersonal justice climate ($\beta=0.225$, $p<0.05$) have a positive impact on average levels of job satisfaction within the subagency, in support of H1a, H1c, and H1d. Yet, the model indicated that procedural justice climate is not a significant predictor of job satisfaction, not in support H1b.

Findings about the relationships between justice climate and collective affective commitment are presented in Model 2. The results revealed that informational ($\beta=0.195$, $p<0.001$) and interpersonal ($\beta=0.135$, $p<0.05$) justice climate are significantly and positively associated with collective federal employees' affective organizational commitment, supporting H2c and H2d. However, distributive and procedural justice climate have insignificant impact on it. H2a and H2b, thus, are not supported.

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H3a through H3d predicted the four dimensions of justice climate would be positively related to perceived work quality as one type of subjective organizational performance. The results demonstrate that while distributive (β=0.036, p<0.1) and interpersonal justice (β=0.201, p<0.001) climate have positive effects on collective perceptions of work quality, procedural and informational justice climate have no significant impact at the federal subagency level. Therefore, I found support only for H3a and H3d.

Model 4 tests the relationships between the four dimensions of justice climate and levels of perceived mission achievement. The results show that procedural (β=0.297, p<0.001) and informational (β=0.153, p<0.1) justice climate are significant predictors of mission achievement perceptions, but distributive and interpersonal justice are not.

H5a through H5d posited that the four justice climates are positively related to collective employees' turnover intention. Supporting H5a, H5c and H5d, the results revealed that distributive (β=-0.070, p<0.001), informational (β=-0.0.37, p<0.1), and interpersonal justice climate (β=-0.046, p<0.05) have a negative impact on average levels of turnover intention. However, procedural justice climate (β=0.052, p<0.1) has a positive impact on turnover intention, which was quite counterintuitive because I would have expected the opposite direction of relationship between the variables.

Finally, I hypothesized that the four types of organizational justice climate are negatively associated with actual turnover rate (H6a–H6d). The results in Model 6 display that while an interpersonal justice climate (β=-0.890, p<0.001) has a negative relationship with turnover behavior, a procedural justice climate (β=1.016, p<0.001) has a positive relationship at the subagency level. Similar to the procedural justice climate-turnover intention linkage, procedural justice climate works in the opposite direction; collective fairness perceptions on procedures

used to decide outcomes increase turnover behavior. Thus, H6d was supported but H6b was not supported. Also, I found no support for the negative impact of distributive (H6a) and informational (H6c) on turnover behavior.

Impact Analysis

This study estimated the relative impact of significant justice climate on the dependent variable in each model in order to compare how they differently contribute to the work-related outcomes. I calculated the differences between a marginal effect of the independent variable at its mean and at one standard deviation above the mean. The differences in the two predicted values at each level were interpreted with respect to standard deviation in the dependent variable (S.-Y. Lee & Whitford, 2013). Table 11 provides the results of analysis.

First, the results show that informational justice has a greater leverage on collective job satisfaction than the two outcome-focused justice climates. To be specific, the impact of a 1 SD increase in distributive and interpersonal justice climate result in a 0.311 SD and 0.185 SD increase in job satisfaction, respectively. The impact of a 1 SD increase in informational justice climate leads to a 0.353 SD increase in job satisfaction. Procedural justice climate, however, has no impact on job satisfaction. Thus, H7 which suggested the stronger positive impact of outcome-focused justice climates (distributive and interpersonal) on job satisfaction than the two process-focused justice climates (procedural and informational), are partially supported.

H8 predicted that process-focused justice climates will be more positively and strongly associated with affective commitment than outcome-focused justice climates. The result revealed that an informational justice climate is the significantly strongest predictor of affective commitment. The impact of a 1 SD increase in informational justice climate is a 0.278 SD increase in shared affective commitment of federal employees. The impact of a 1 SD increase in

interpersonal justice climate, on the other hand, generates a 0.133 SD increase in affective

commitment. Yet, distributive and procedural justice climate have no significant impact on

affective commitment. Thus, the H8 is partially supported.

H9 posited that process-focused justice climates have a stronger positive effect on work

quality than outcome-focused justice climates. The results present that the impact of a 1 SD

increase in distributive and interpersonal justice climate results in a 0.068 SD and 0.220 SD

increase in work quality, respectively. In contrast, procedural and informational justice climate

have no significant impact at all. Therefore, H9 is not supported.

The results for H10 which postulate that process-focused justice climates are more

positively and strongly associated with mission achievement than outcome-focused justice

climates, were supported. Although distributive and interpersonal justice have no significant

impact on mission achievement, the impact of 1 SD increase in procedural and informational

justice climate results in a 0.277 SD and 0.263 SD increase in mission achievement, respectively.

H11 suggested that outcome-focused justice climates have a stronger negative effect on

turnover intention than process-focused justice climates. The impact of a1 SD increase in

distributive and interpersonal justice climate lead to a 0.196 SD and 0.077 SD decrease in job

satisfaction respectively. While the impact of a 1 SD increase in procedural justice climate is a

0.11 SD increase in turnover intention, the impact of a 1 SD increase in informational justice

climate is a 0.144 SD decrease in turnover intention. These results indicate that H11 is partially

supported.

H12 proposed that outcome-focused justice climates would be more negatively related to

turnover behavior than process-focused justice climates. The results show that interpersonal

justice climate is significantly and negatively associated with turnover behavior, but distributive

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justice climate is not. The results also reveal that while a procedural justice climate has a positive effect on turnover behavior, informational justice climate has a negative effect on it. That is, the impact of a 1 SD increase in procedural justice climate is a 0.414 SD increase in turnover behavior, whereas the impact of a 1 SD increase in interpersonal justice climate is a 0.281 SD decrease in turnover intention. Thus, H12b is partially supported.

Discussion

The purpose of this chapter is to provide empirical evidence on how the four dimensions of justice climate influence a variety of work-related outcomes and their differential effects at the federal agency level. Although many researchers now agree that organizational justice is a significant predictor of positive work attitudes and behavior at the unit level beyond individual level (Li & Cropanzano, 2009; Liao & Rupp, 2005; Whitman et al., 2012), we know of few empirical studies that have investigated the relationships between justice climate and organizational-level work outcomes. In this respect, this study contributes to justice climate literature by demonstrating the impact of four dimensions of justice climate on six types of organizational outcomes (i.e., job satisfaction, affective commitment, perceived work quality, perceived mission achievement, turnover intention, and turnover behavior). Drawing on the norm of reciprocity—the idea that employees are more likely to exhibit favorable job attitudes and engage in desired behaviors when they are being treated fairly—, I proposed that the four justice climates are positively related to the work outcomes at the organizational level. In addition, using the two-factor model, it is assumed that four justice climates are differently related to different types of outcomes which are person-related outcomes (job satisfaction, turnover intention, and

turnover behavior) and system-related outcomes (affective commitment, work quality, and mission achievement).

Despite the overall positive effects of shared justice perceptions on work attitudes and subjective organizational performance, but negative impact on turnover intention and behavior, this study, surprisingly, yields somewhat mixed evidence. Specifically, informational justice climate is a better predictor of job satisfaction and effective organizational commitment than the two dimensions of outcome-focused justice climate: distributive and interpersonal justice climate. Procedural justice climate, on the other hand, has no significant impact on work attitudes. Inconsistent with the notion that the outcome-focused justice is more influential in job satisfaction (person-related outcome) than process-focused justice, collective federal employees place a greater value on adequate explanations and information regarding events at work in job satisfaction and commitment to the organization. These findings are very similar to the results of Cho and Sai (2012) individual-level analysis. Thus, it seems that key activities of supervisors should include providing accuracy and quality of social accounts as to organizational procedures.

Principal findings about the relationships between four justice climates and the two types of subjective organizational performance show that the distributive and interpersonal justice climate are positively associated with perceived work quality, whereas the procedural and informational justice climate are positively associated with perceived mission achievement. Considering the two-factor model, suggesting that process-focused justice climate is a better predictor of performance than outcome-focused justice climate, the strong relationships between distributive and interpersonal justice climate on work quality are somewhat unexpected. These results imply that equity-rules of the organization and interpersonal treatment by supervisors are perceived as salient drivers to work quality improvement in federal government.

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Finally, the findings demonstrated that distributive, informational, and interpersonal justice climate are significantly and negatively associated with turnover intention. However, informational justice climate is only significantly and negatively related to employee's actual turnover behavior among four dimensions of justice climates. Furthermore, I found that while distributive justice climate explains a greater variance of turnover intention, informational justice climate explains a greater variance of turnover behavior. These results are inconsistent with previous studies at the individual level, reporting that interpersonal justice (Choi, 2011) and procedural justice (Hassan, 2013) are primary predictors of turnover intention in public organizations. Interestingly, the findings revealed the positive impact of procedural justice climate on turnover intention and behavior that are counterintuitive in light of the norm of reciprocity. A possible explanation is that collective federal employees may perceived formal procedures, used to decide rewards or compensation based on performance or inputs, as an unobservable form of control (Gould-Williams & Mohamed, 2010; Ko & Smith-Walter, 2013) which, in turn, increase the intention to leave their organizations and actual turnover rates.

In short, the findings indicated that organizational justice climate has a positive relationship with work attitudes and subjective organizational performance, but a negative relationship with turnover intention and behavior. However, it should be emphasized that there are some unexpected results that are inconsistent with the SET and the two-factor model. These results may hint at the necessity of different expectation about the effects of four justice perceptions on the work-related outcomes as well as their possibly different impacts on the different types of outcomes at the organizational level and in the public sector.

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Table 9. Summary Statistics and Correlation Matrixes

	Mean	SD	1	2	3	4	5	6	7
1 Collective job satisfaction	3.55	0.17							
2 Collective affective commitment	3.90	0.14	0.83***						
3 Collective perception of work quality	4.21	0.13	0.67***	0.71***					
4 Collective perception of mission achievement	3.93	0.20	0.53***	0.57***	0.60***				
5 Collective Turnover intention	0.34	0.09	-0.72***	-0.64***	-0.49***	-0.17***			
6 Turnover behavior	-2.56	0.45	-0.35***	-0.12*	-0.27***	-0.06***	0.43***		
7 Distributive justice climate	2.84	0.24	0.82***	0.72***	0.67***	0.53	-0.57***	-0.20***	
8 Procedural justice climate	3.64	0.18	0.73***	0.70***	0.78***	0.65***	-0.39***	-0.20***	0.77***
9 Informational justice climate	3.40	0.20	0.81***	0.76***	0.72***	0.66***	-0.50***	-0.23***	0.79***
10 Interpersonal justice climate	4.03	0.14	0.71***	0.60***	0.84***	0.50***	-0.50***	-0.31***	0.73***
11 Resource	3.51	0.17	0.76***	0.75***	0.67***	0.71***	-0.47***	-0.22***	0.80***
12 Gender diversity	0.44	0.05	0.03	0.10*	0.14*	-0.01	0.00	0.30***	0.17***
13 Racial diversity	0.46	0.09	-0.15***	-0.17***	-0.14*	0.07	0.20***	-0.05	-0.09
14 Age diversity	0.85	0.02	-0.14*	0.01	-0.05	-0.10*	0.09	0.36***	0.09
15 Professional rate	0.29	0.23	0.43***	0.43***	0.52***	0.13*	-0.46***	-0.19***	0.65***
16 Technician rate	0.16	0.13	-0.35***	-0.10†	-0.35***	-0.20***	0.09	0.38***	-0.27***
17 Clerical rate	0.04	0.07	-0.27***	-0.10†	-0.15***	-0.03	0.13*	0.40***	-0.17***
18 Workforce size, log	9.16	0.97	-0.31***	-0.21***	-0.40***	-0.28***	0.02	-0.01	-0.38***

	9	10	11	12	13	14	15	16	17	18
8 Procedural justice climate										
9 Informational justice climate	0.89***									
11 Interpersonal justice climate	0.87***	0.80***								
12 Resource	0.76***	0.86***	0.65***							
13 Gender diversity	0.04	0.10†	0.11***	0.16***						
14 Racial diversity	-0.07	0.03	-0.09	0.14***	0.10*					
15 Age diversity	-0.06	-0.04	-0.02	-0.01	0.19***	-0.06				
16 Professional rate	0.59***	0.50***	0.59***	0.49***	0.13*	-0.20***	0.25***			
17 Technician rate	-0.32***	-0.27***	-0.38***	-0.17***	0.20***	-0.03	0.27***	-0.19***		
18 Clerical rate	-0.23***	-0.15***	-0.22*	-0.03	0.14*	0.19***	0.16***	-0.19***	0.20***	
19 Workforce size, log	-0.42***	-0.33***	-0.45***	-0.24***	-0.21***	0.16***	0.18***	-0.25***	0.23***	0.15***

Note: N=324; ***$p < .001$, **$p < .01$, *$p < .05$, †$p < .10$.

Table 10. GEE Population-Averaged Model Results

	Work attitudes				Subjective organizational performance				Turnover			
	Model 1		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
	Job satisfaction		Affective commitment		Work quality		Mission achievement		Turnover intention		Turnover behavior	
	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
Distributive justice climate	0.223 ***	0.04	0.038	0.04	0.036 †	0.02	-0.001	0.06	-0.070 ***	0.01	-0.148	0.11
Procedural justice climate	-0.026	0.07	0.021	0.08	0.011	0.03	0.297 ***	0.08	0.052 *	0.03	1.016 ***	0.29
Informational justice climate	0.304 ***	0.07	0.195 ***	0.05	-0.015	0.03	0.153 *	0.08	-0.037 †	0.02	-0.203	0.23
Interpersonal justice climate	0.225 *	0.09	0.135 *	0.06	0.201 ***	0.04	-0.062	0.08	-0.046 *	0.02	-0.890 ***	0.21
Dependent variable, lag	0.026	0.04	0.038	0.04	0.676 ***	0.04	0.283 ***	0.05	0.873 ***	0.04	0.537 ***	0.07
Resource	0.200 ***	0.06	0.391 ***	0.05	0.074 *	0.04	0.409 ***	0.07	0.031	0.02	-0.243	0.19
Gender diversity	-0.105	0.17	-0.048	0.17	0.097 †	0.05	-0.055	0.21	0.012	0.03	1.199 ***	0.30
Racial diversity	-0.221 ***	0.07	-0.221 ***	0.08	-0.068 ***	0.03	-0.082	0.08	0.041 *	0.02	-0.144	0.17
Age diversity	-0.390	0.31	0.291	0.37	-0.233	0.14	0.434	0.57	0.369 ***	0.09	4.134 ***	1.07
Rate professional	-0.121 ***	0.03	0.021	0.05	-0.010	0.01	-0.220 ***	0.06	-0.008	0.01	-0.145 *	0.07
Rate technical	-0.141 *	0.06	0.000	0.05	0.000	0.03	-0.049	0.08	-0.029 ***	0.01	0.215	0.18
Rate clerical	-0.133 ***	0.03	0.035	0.03	0.020	0.02	-0.060	0.04	-0.027	0.02	0.854 ***	0.17
Workforce size	0.009	0.01	0.012	0.01	0.000	0.00	0.000	0.01	-0.006 ***	0.00	-0.040 *	0.02
Constant	0.706 †	0.40	0.724 †	0.39	0.376 *	0.18	-0.212	0.62	0.003 *	0.09	-2.981 ***	1.12
Observations	324		324		324		324		324		324	
Link Function	Identity		Identity		Identity		Identity		Identity		Identity	
Family	Gaussian		Gaussian		Gaussian		Gaussian		Gaussian		Gaussian	
Working Correlations Matrix	AR(1)		AR(1)		AR(1)		AR(1)		AR(1)		AR(1)	
Wald χ^2	3079.11		913.65		6638.23		655.10		6104.09		1774.32	
Scale Parameter	0.004		0.007		0.001		0.008		0.001		0.070	

Note: SE= Robust Standard Error
***p < .001; **p < .01; *p < .05 †p < .10.

Table 11. Impact Analysis

	Job satisfaction	Affective commitment	Work quality	Mission achievement	Turnover intention	Turnover behavior
Distributive justice climate	0.311	Not significant	0.068	Not significant	-0.196	Not significant
Procedural justice climate	Not significant	Not significant	Not significant	0.277	0.110	0.414
Informational justice climate	0.353	0.278	Not significant	0.263	-0.144	Not significant
Interpersonal justice climate	0.185	0.133	0.220	Not significant	-0.077	-0.281

CHAPTER 8

CONCLUSION

The fundamental tenet of justice climate research starts with the assumption that social processes within the organization enable employees to share perceptions of justice and create collective consensus on their thoughts about justice. Likewise, for individual-level justice, considerable support in the literature indicates that there are four distinct dimensions of justice climates: distributive, procedural, informational, and interpersonal. These do not occur in isolation; instead, they are part of an organizational context (e.g., decentralized structure and trust in leadership). Furthermore, the justice climates are strong drivers to facilitate the norm of reciprocity that leads to positive outcomes relevant to the organization (e.g., work attitudes, performance, and turnover).

Organizational justice climate is a promising area of study in public administration, but is still in its infant stage. It should be noted that the scant attention paid to justice climate in public organizations might lead to less understanding regarding what organizational contexts shape the four dimensions of justice climate and how the justice climates predict a broad range of work outcomes. In recognition of this, the current study notably advances theoretical and practical understanding of fairness. It extends the search for organizational attributes as determinants of justice climate formation, and a variety of organizational-level outcomes as consequences of justice climate.

In this concluding chapter, I will highlight key findings of this study. Then, based on these findings, I will discuss the theoretical and practical implications, followed by limitations and recommendation for future research.

Summary of Findings

Answering the two research questions, what organizational attributes influence justice climate and how the justice climate affects organizational consequences, is essential for advancing justice theories in public administration. Based on the two questions, I summarize the findings of this study.

1. How do organizational attributes (supervisory trust and perceptions of decentralized structure) impact the four dimensions of organizational justice climate?

Focusing on the two sources of justice - organization and supervisor (Colquitt & Shaw, 2005; Greenberg, 1993), in chapter 4, I proposed that collective supervisory trust and perceived decentralization are positively related to justice perceptions at the federal subagency level. Table 12 summarizes the hypothesis test results of the models.

The findings of chapter 6 indicated that federal employees' collective trust in supervisor is a significant predictor of all dimensions of justice climate. This evidence is consistent with fairness heuristic theory, which suggests that supervisor trust improves justice judgments by reducing subordinates' uncertainty about whether they are exploited by others. Although previous studies provided considerable empirical findings on the positive relationship between trust and justice perceptions at the individual level (Brashear et al., 2005; Kickul et al., 2005; Rosier et al., 2010; Tyler, 1994), the current study demonstrates that this relationship is also true

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at the organizational level. That is, federal employees who have high levels of trust in leadership perceive that the policies and practices of leaders are in accordance with both moral norms and their best interests (Lind & Tyler, 1988; Tyler, 1989). As employees collectively enhance a belief regarding supervisory trust and share it with others, organizational-level uncertainty decreases, which in turn leads to higher employees' shared perceptions of justice within the subagency (Cropanzano, Rupp, et al., 2001; Lind et al., 1998; Van den Bos et al., 2001).

In addition to supervisory trust, another principal finding of chapter 6 is that aggregated perceptions of decentralized structure were significantly and positively related to the four dimensions of justice climates. This finding is interesting; it juxtaposes the view that decentralization characterized by task-related autonomy and a lower degree of authority hierarchy enhances perceptions of organizational justice at the individual level (Ramaswami & Singh, 2003; Schminke et al., 2000; Schminke et al., 2002; Zhang & Agarwal, 2009). Since greater participation and job discretion leads to greater influence on decision-making procedures, then distributive and procedural justice climate should increase with each (Schminke et al., 2002). Furthermore, decentralized structure allows the top of the hierarchy to place greater value on employee dignity and interpersonal communication, and thereby promote interactional and informational justice (Schminke et al., 2000). Beyond the individual-level research, the findings provide new evidence supporting the positive link between decentralized structure and justice climate at the organizational level.

Based on the multifocal model that emphasizes the important role of sources of justice judgment, I hypothesized that supervisory trust would be have more influence on informational and interpersonal justice climate (supervisor-referenced); whereas perceived decentralized structure would be more have a greater effect on distributive and procedural justice climate

(system-referenced). The findings demonstrated that while collective supervisory trust is a better predictor of procedural, informational, and interpersonal justice climate, perceived decentralization is a better predictor of distributive justice climate. Given that the supervisor-oriented justice climate is originally separated from the procedural justice climate, it is conceivable that collective supervisory trust has greater variance among federal employees, resulting in stronger relationships with procedural justice climate than collective perceptions of decentralized structure. Although these findings partially support the hypotheses, what is remarkable is that justice climate formation in federal government depends on sources of justice judgment.

2. How do the four dimensions of organizational justice climate impact work attitudes (job satisfaction and affective organizational commitment), subjective organizational performance (work quality and mission achievement), and turnover (turnover intention and turnover behavior)?

Drawing from social exchange theory, the literature suggested that fair treatment generates the norm of reciprocity. This encourages collective federal employees to feel obligated to repay the organization or supervisors who have helped them (Bal et al., 2011; Gould-Williams, 2007; Haar & Spell, 2009; Poon, 2012; Scott & Colquitt, 2007; Tekleab et al., 2005). Accordingly, I proposed in chapter 5 that the four justice climates are positively related to job satisfaction, affective commitment, work quality, and mission achievement, but negatively related to turnover intention and behavior at the subagency level. This study yielded very mixed results. Table 13 summarizes the hypothesis test results of the models.

First, distributive, informational, and interpersonal justice climates have a positive impact on collective job satisfaction, whereas procedural justice climate has no significant impact on it.

Second, the findings revealed that only informational and interpersonal justice climates are significantly and positively associated with collective affective commitment. Third, while distributive and interpersonal justice climates are significant predictors of perceived work quality, procedural and informational justice climates are significant predictors of perceived mission achievement at the federal subagency level. However, the findings showed that the effects of procedural and informational justice climates on perceived work quality, and the effects of distributive and interpersonal justice climate on perceived mission achievement, are statistically insignificant.

Fourth, the findings revealed that distributive, informational, and interpersonal justice climates are negatively associated with collective turnover intention. In addition, interpersonal justice climate is a significant predictor only of turnover behavior. Interestingly, I found the relationship between procedural justice climate and turnover is in the opposite direction from the hypotheses. That is, the findings presented that procedural justice climate is positively related to both turnover intention and turnover behavior. This counterintuitive result is plausible because collective employees in public organizations may perceive formal procedures, such as performance appraisals used to decide extrinsic rewards, as organizational controls (Niehoff & Moorman, 1993). Indeed, some individual-level studies provided evidence suggesting that performance appraisal systems often lead to undesirable consequences in public organizations. For example, (Ko & Smith-Walter, 2013) found that performance appraisal policies decreased public employees' job involvement. Similarly, Oh and Lewis (2009) and Weibel, Rost, and Osterloh (2010) revealed that performance appraisal and performance standard settings for

allocating extrinsic rewards are less effective for public employees who have high levels of intrinsic work motivation.

Finally, using the two-factor model that discerns the differential impact of justice perceptions on work outcomes, I suggested that the two dimensions of outcome-focused justice climate—distributive and interpersonal—are likely to exert a greater effect on more person-related outcomes (i.e., job satisfaction, turnover intention, and turnover behavior). On the other hand, another two dimensions of process-focused justice climate—procedural and informational—are likely to exert greater impact on system-related outcomes (i.e., affective commitment, work quality, and mission achievement). The findings were somewhat mixed. Specifically, informational justice climate not only has the strongest positive influence on affective commitment but also has the strongest positive influence on job satisfaction. In regard to varying effects of the four dimensions of justice climate on subjective performance, it is interesting to see that while two outcome-focused justice climates have more leverage on perceived work quality, the two process-focused justice climates have more leverage on perceived mission achievement. These results may imply that work quality is a type of performance that is more related to person-related outcomes in the public organizations. As expected, the negative impact of distributive justice climate on turnover intention is larger than that of procedural and informational justice climates. This suggests that collective federal employees mainly draw on shared perceptions of outcome distribution fairness for their turnover intention. As hypothesized, the findings indicated that interpersonal justice climate has a stronger negative effect on turnover behavior than procedural and informational justice climates. In contrast, one should notice that procedural justice climate is the strongest predictor of increasing turnover behavior.

Theoretical Implications

This study provides critical implications and contributions to the field of public administration. First, this study extends organizational justice research at the individual level by expanding our knowledge about determinants and consequences of collective perceptions of fairness at the organizational level. Although evidence from empirical studies in business management suggests that organizational members often share their own experience and opinions of fairness, and collectively react to fair (or unfair) treatment (Ambrose & Schminke, 2009; Li & Cropanzano, 2009; Liao & Rupp, 2005; Mossholder, Bennett, & Martin, 1998; Naumann & Bennett, 2000; Whitman et al., 2012), most of the past research in public administration tends to focus on justice perceptions at the individual level of analysis (Choi, 2011; De Schrijver et al., 2010; Hassan, 2013; S. E. Kim & Rubianty, 2011; Noblet & Rodwell, 2009; Rubin, 2009). Admittedly, such individual level studies contributed to understanding of how public employees react when they perceive the work environment to be fair. In addition, they established a basis for examining how organizational-level justice perceptions can be conceptualized from the individual level construct and how they affect various work-related outcomes. However, considering that justice climate explains significant variance in outcomes beyond the individual level, it is essential to explore shared fairness perceptions at the organizational level to advance the understanding of organizational justice in public administration.

Second, this study provides the first step in shedding light on the underlying mechanisms through which organizational characteristics shape the justice climate. Theoretical work argues that individuals' decisions on fairness would be thoughtfully derived from organizational and

social context (Ambrose, 2002; Barsky et al., 2011; Crawshaw et al., 2013). Indeed, a growing number of studies have identified a variety of contextual factors that affect justice perceptions (M. C. Andrews & Kacmar, 2001; Barsky et al., 2011; Colquitt et al., 2006; Elovainio et al., 2002; Erdogan et al., 2006; Schminke et al., 2002; Zhang & Agarwal, 2009). Yet, it is somewhat surprising that one cannot find as much research on determinants of justice judgment formation in public administration as exists in business management. In this regard, this study demonstrated that the two organizational attributes of federal agency—collective supervisory trust and perceptions of decentralized structure—are powerful predictors of the four dimensions of justice climate. The findings offer the first evidence that strong trust in leadership and flexible structure make collective federal employees view their agencies as fair. However, it would be naïve to consider supervisory trust and decentralized structure as the only significant attributes or contextual factors that affect justice climate.

Third, this study extends organizational justice research in public administration by examining the relationships between all four dimensions of justice climate on various work-related outcomes, particularly given the substantial perceived justice–attitudes link that is found at the individual level. Although researchers agree that employees differentiate between distributive, procedural, informational, and interpersonal justice, prior individual-level research has been conducted on the effects of only two or three of the dimensions on organizational outcomes (except for Noblet and Rodwell (2009)). Furthermore, considering that many scholars focused primarily on employee work attitudes as dependent variables (e.g., job satisfaction, trust, and turnover intention), this study contributes to current scholarship in justice research by adding different types of work-related outcomes to the pool of consequences of perceived justice, such as work quality, mission achievement, and turnover behavior.

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Fourth, another implication might be that more attention needs to be given to informational justice climate and interpersonal justice climate. The findings of this study clearly demonstrated that the two dimensions of interactional justice climate deriving from supervisors have an outstanding role in improving most of six types of work-related outcomes at the federal subagency level. It is important to understand why collective federal employees place a greater value on their shared perceptions of informational and interpersonal fair treatment than on non-interactional justice climates. One possible explanation for the strong impact of the two dimensions of interactional justice climate is the "spillover" of justice judgment sources (Colquitt et al., 2013; Rupp et al., 2007). That is, collective perceptions of fair treatment by supervisors may result in positive attitudes and behavior aimed at both supervisor and organization. Because employees tend to perceive their supervisors as a key part of the organization, such treatment has a significant influence not only on person-referenced outcomes, but also on system-referenced outcomes (Whitman et al., 2012).

Practical Implications

Apart from the theoretical implications, the findings of this study have strong implications for actionable strategies that public managers and organizations could apply to improve justice climate and positive organizational outcomes. Public administration researchers have consistently recommended that the core activities of public managers and the managerial practices of their organizations should include building fair processes for allocating rewards (Cho & Sai, 2012; Choi, 2009; Hassan, 2013; Meng & Wu, 2015), creating quality of interpersonal relationships (Chen & Jin, 2014), and offering adequate explanations in a timely and effective manner (Cho & Sai, 2012). Although these recommendations are useful for public

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managers and organizations, I argue that they are only part of the picture, focusing mainly on specific characteristics of justice perceptions. The findings of chapter 7 extend the existent practical implications by considering supervisory trust and decentralized structure as effective strategies to promote collective perceptions of justice in federal government.

First, the findings of chapter 6 suggest that public managers might increase shared perceptions of justice within the agency by building up levels of trust in themselves and their subordinates. Building on fairness heuristic theory, subordinates are often uncertain about whether or not they are fairly treated by their organizations and supervisors. However, supervisory trust can be a significant signal that their supervisors act in accordance with moral norms and care about their best interests. In other words, subordinates who do not have sufficient justice-related information are willing to accept the outcomes the organization or supervisors provide to them when there is a high level of trust in management.

Second, public managers also should take into account that a decentralized structure leads to an increase in justice climate. Specifically, managers should be proactive in allowing subordinates to participate in decision making in terms of policymaking, recruiting, and promotion. In addition, they could focus on implementing empowerment practices that enhance employees' discretion and responsibility involved in performing their jobs. The combination of the two practices may lead subordinates to believe that they are fairly treated by the rewards they receive.

A final practical implication is based on the findings about varying effects of the supervisory trust and perceived decentralization on justice climate and the differential impact of the four dimensions of justice climate on various types of work outcomes. That is, these findings allow public managers to develop diverse strategies to improve target outcomes. For example,

informational justice outperforms other dimensions of justice climate in improving desirable

work attitudes. Federal subagencies with overriding concerns about job satisfaction and

organizational commitment could focus on offering reasonable explanations about justice-

relevant events or treatment in a collective format instead of to one individual employee at a time.

In terms of organizational performance, subagencies should commit to creating the two outcome-

focused justice climates (i.e., distributive and interpersonal) to increase work quality; they should

pursue procedural and informational justice climate to improve mission achievement. In addition,

public managers may use various channels such as informal discussions and social gatherings

with their subordinates to enhance trust in management, which in turn facilitates collective

perceptions of informational justice. Subagencies that prioritize the reduction of turnover need to

intensively foster distributive justice climate (e.g., equitable allocation of rewards based on work

units) and informational justice climate, but should be aware that fair procedures (e.g.,

performance appraisal system) could be have the opposite result and increase collective turnover

intention and behavior. Based on the findings, one way for federal subagencies to maintain

collective personal stability is to encourage employees' job autonomy and involvement in

decision-making procedures as a means of enhancing their shared sense of distributive justice.

Limitations and Future Research Directions

Several limitations of this study require caution when interpreting the results. At the same

time, however, these limitations offer valuable opportunities for future research.

First, it must be acknowledged that the findings cannot be universally applicable because

they emerge from an analysis in the working environment of the U.S. federal government during

specific time periods (2010 to 2014). Previous research, however, has provided similar evidence

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to that presented in this study in terms of the impact of various contextual factors on justice climate and the positive relationships between justice climate and organizational outcomes across nations (Moliner et al., 2005; Simons & Roberson, 2003; Zhang & Agarwal, 2009) and sector (Brashear et al., 2005; Ramaswami & Singh, 2003; Roberson, 2006a, 2006b). This means that the findings presented in this study have relevance for wider audiences outside the U.S. and the public sector. For future research, nonetheless, it is essential that scholars continue to dissect the formation of shared justice perceptions and their consequences at the unit-level in other nations, at different levels of government, and in different sectors at different points in time. Such scholarly effort would help increase external validity of the findings of this study.

Second, the use of variables constructed in some models that utilize employees' self-reports (e.g., the four types of justice climate, perceptions of decentralization, and perceived work quality) may raise concerns with common method variance (CMV). Harman's single-factor test performs the principal component factor analysis of all observed variables in models. Although Harman's test indicated that CMV is not a serious problem in this study (Cho & Sai, 2012; Oberfield, 2014), this diagnostic test cannot completely rule out the possibility of CMV (Podsakoff et al., 2003). Given that one of the best ways to avoid CMV is to use the measures of the independent and dependent variables from different data sources (Miere & O'Toole, 2013), the investigations of determinants and consequences of justice climate would be enriched if future research uses other measures complementary to self-reported survey items (e.g., organizational performance drawn from Performance and Accountability Reports and objective organizational structure indexes).

Third, another potential problem is omitted variable bias in which regressors are correlated with some unobserved factors. Although lag dependent variables were included in the

models to minimize this bias (Keele & Kelly, 2006; Oberfield, 2014; Zhu, 2013), the exclusion of relevant variables may still yield over-or under estimations. For instance, the literature revealed that various factors including public service motivation, transformational leadership, goal ambiguity, and Work/Family policies are significant predictors of work-related outcomes (Castaing, 2006, Oberfield, 2015; Jung 2012; Jun & Rainey, 2005; Rainey, 2014; Kim & Mulins, 2014). The models in this study do not control all the factors that affect the four dimensions of justice climate and work-related outcomes, which in turn leave the possibility of omitted variable bias. What future research can do, thus, is to include as many observable factors as possible.

The fourth limitation is related to the problem of aggregation. Specifically, (Whitford et al., 2010, p. 330) noted, "Aggregation across judgments of ordinal rank is not simple." They pointed out that public administration researchers often treat ordinal variables as continuous, although the interval between "agree" and "strongly agree" has a non-linear nature. In a similar vein, Quinn (2004, p. 339) argued that neglecting the ordinal characteristic of observed variables may "result in falsely precise and possibly estimates." The data of this study could suffer from these problems. Fortunately, however, future research can generate more reliable results using factor analysis models suggested by Quinn (2004) that accommodate both continuous and ordinal responses.

Fifth, I recognize that the findings in chapter 6 provide only a first step in understanding the impact of the two organizational attributes (i.e., collective supervisor trust and perceived decentralization) on justice climate formation in the public sector. However, previous research suggested that various kinds of contextual factors, including formalization, vertical complexity, power distance, uncertainty, and power distance, impact employees' justice perceptions (Ang, Van Dyne, & Begley, 2003; Aryee et al., 2004; Schminke et al., 2002). Clearly, future research

needs to explore more about what factors shape collective justice perceptions. Furthermore, we need greater understanding of their varying effects on justice climate.

Sixth, although the chapter 7 of the current study provides initial evidence of the relationships between the four justice climates and six types of work-related outcomes at the federal subagency level, previous studies have shown that justice climate is a strong predictor of a variety of employee work outcomes, including organizational citizenship behavior (Ambrose, Schminke, & Mayer, 2013; Cropanzano, Li, et al., 2011), counter productive work behavior (Priesemuth et al., 2013), burnout (Moliner et al., 2005), depression and anxiety (Spell & Arnold, 2007), and absenteeism (Colquitt et al., 2002). Future studies that replicate and extend the findings of this study to additional different types of work outcomes at the organizational level could improve the understanding of justice climate and its effect on the outcomes.

Finally, because the unit of analysis of the current study is the U.S. federal subagency, the inferences of findings are not applicable to individual level units of analysis. The ecological fallacy, which "occurs when behavior observed at the group or aggregate level is assumed to hold for individuals who belong to that group" (Bradbury & Kellough, 2010, p. 164) may result in the problem of exaggerated coefficients deriving from aggregated data (Jung, 2010; Kramer, 1983; Roberts, Hulin, & Rousseau, 1978). Although evidence suggested aggregation was appropriate, concerns remain about ecological inference problems.

Table 12. Summary of Hypothesis Test (Chapter 3 and 6)

Hypotheses	Results
Collective Supervisory Trust and Justice Climate	
H1a: Collective supervisory trust will be positively associated with distributive justice climate.	Supported
H1b: Collective supervisory trust will be positively associated with procedural justice climate.	Supported
H1c: Collective supervisory trust will be positively associated with informational justice climate.	Supported
H1d: Collective supervisory trust will be positively associated with interpersonal justice climate.	Supported
Collective Perceptions of Decentralized Structure and Justice Climate	
H2a: Collective perceptions of decentralized structure will be positively associated with distributive justice climate.	Supported
H2b: Collective perceptions of decentralized structure will be positively associated with procedural justice climate.	Supported
H2c: Collective perceptions of decentralized structure will be positively associated with informational justice climate.	Supported
H2d: Collective perceptions of decentralized structure will be positively associated with interpersonal justice climate.	Supported
Multifoci Model: Focusing on the Two Sources of Justice	
H3: Collective supervisor trust will be more strongly associated with supervisor-referenced justice climates (i.e., informational and interpersonal) than system-referenced justice climates (i.e., distributive and procedural).	Supported
H4: Collective perceptions of decentralized structure will be more strongly associated with system-referenced justice climates (i.e., distributive and procedural) than supervisor-referenced justice climates (i.e., informational and interpersonal).	Partially Supported

Table 13. Summary of Hypothesis Test (Chapter 4 and 7)

	Hypotheses	Results
	Justice Climate and Work Attitudes	
H1a:	Distributive justice climate will be positively associated with collective job satisfaction.	Supported
H1b:	Procedural justice climate will be positively associated with collective job satisfaction.	Not Supported
H1c:	Informational justice climate will be positively associated with collective job satisfaction.	Supported
H1d:	Interpersonal justice climate will be positively associated with collective job satisfaction.	Supported
H2a:	Distributive justice climate will be positively associated with collective affective commitment.	Not Supported
H2b:	Procedural justice climate will be positively associated with collective affective commitment.	Not Supported
H2c:	Informational justice climate will be positively associated with collective affective commitment.	Supported
H2d:	Interpersonal justice climate will be positively associated with collective affective commitment.	Supported
	Justice Climate and Subjective Organizational Performance	
H3a:	Distributive justice climate will be positively associated with collective perceptions of work quality.	Supported
H3b:	Procedural justice climate will be positively associated with collective perceptions of work quality.	Not Supported
H3c:	Informational justice climate will be positively associated with collective perceptions of work quality.	Not Supported
H3d:	Interpersonal justice climate will be positively associated with collective perceptions of work quality.	Supported
H4a:	Distributive justice climate will be positively associated with collective perceptions of mission achievement.	Not Supported
H4b:	Procedural justice climate will be positively associated with collective perceptions of mission achievement.	Supported

H4c:	Informational justice climate will be positively associated with collective perceptions of mission achievement.	Supported
H4d:	Interpersonal justice climate will be positively associated with collective perceptions of mission achievement.	Not Supported

Justice Climate and Turnover

H5a:	Distributive justice climate will be negatively associated with collective turnover intention.	Supported
H5b:	Procedural justice climate will be negatively associated with collective turnover intention.	Not Supported
H5c:	Informational justice climate will be negatively associated with collective turnover intention.	Supported
H5d:	Interpersonal justice climate will be negatively associated with collective turnover intention.	Supported
H6a:	Distributive justice climate will be negatively associated with collective turnover behavior.	Not Supported
H6b:	Procedural justice climate will be negatively associated with collective turnover behavior.	Not Supported
H6c:	Informational justice climate will be negatively associated with collective turnover behavior.	Not Supported
H6d:	Interpersonal justice climate will be negatively associated with collective turnover behavior.	Supported

Two-Factor Model - Focusing on the Two Contents of Justice

H7:	Outcome-focused justice climates (i.e., distributive and interpersonal) will more strongly associated with collective job satisfaction than process-focused justice climate (i.e., procedural and informational).	Partially Supported
H8:	Process-focused justice climates (i.e., procedural and informational) will be more strongly associated with collective affective commitment than outcome-focused justice climates (i.e., distributive and interpersonal).	Partially Supported
H9:	Process-focused justice climates (i.e., procedural and informational) will be more strongly associated with collective perceptions of work quality than outcome-focused justice	Not Supported

climates (i.e., distributive and interpersonal).

H10:	Process-focused justice climates (i.e., procedural and informational) will be more strongly associated with collective perceptions of mission achievement than outcome-focused justice climates (i.e., distributive and interpersonal).	Supported
H11:	Outcome-focused justice climates (i.e., distributive and interpersonal) will be more strongly associated with collective turnover intention than process-focused justice climates (i.e., procedural and informational).	Partially Supported
H12:	Outcome-focused justice climates (i.e., distributive and interpersonal) will be more strongly associated with collective turnover behavior than the two process-focused justice climates (i.e., procedural and informational).	Partially Supported

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APPENDIX

Measurement Items for all variables

Distributive justice climate
- Promotions in my work unit are based on merit.
- Awards in my work unit depend on how well employees perform in their jobs.
- Pay raises depend on how well employees perform in their jobs.

Procedural justice climate
- My performance appraisal is a fair reflection of my performance.
- I can disclose a suspected violation of any law, rule or regulation without fear of reprisal.
- Arbitrary action, personal favoritism and coercion for partisan political purposes are not tolerated.
- Prohibited personnel practices (for example, illegally discriminating for or against any employee/applicant, obstructing a person's right to compete for employment, knowingly violating veterans' preference requirements) are not tolerated.

Informational justice climate
- Managers communicate the goals and priorities of the organization.
- Managers promote communication among different work units (for example, about projects, goals, and needed resources).
- How satisfied are you with the information you receive from management on what is going on in your organization?

Interpersonal justice climate
- My supervisor/team leader listens to what I have to say.
- My supervisor/team leader treats me with respect.

Collective supervisory trust
- I have trust and confidence in my supervisor.
- I have a high level of respect for my organization's senior leaders.
- How satisfied are you with the policies and practices of your senior leaders?

Collective perceptions of decentralized structure
- Do you have a feeling of personal empowerment with respect to work processes?
- How satisfied are you with your involvement in decisions that affect your work?

Collective job satisfaction
- Considering everything, how satisfied are you with your job?
- Considering everything, how satisfied are you with your pay?
- Considering everything, how satisfied are you with your organization?

Collective affective commitment

- My work gives me a feeling of personal accomplishment.
- I like the kind of work I do.
- I recommend my organization as a good place to work.

Collective perceptions of work quality

- How would you rate the overall quality of work done by your work group?

Collective perceptions of mission achievement

- My agency is successful at accomplishing its mission.

Turnover intention

- Are you considering leaving your organization within the next year and if so, why? (1 for yes, 0 for no)

Turnover behavior

- The number of "individual transfer-out", "quits", "voluntary retirement", and "early-out retirement" / The total number of employees

Female employee rate

- The number of female employees / the total number of employees

Minority employee rate

- The number of minority employees (non-white) / the total number of employees

Supervisor rate

- The number of supervisors / the total number of employees

Leader rate

- The number of leaders / the total number of employees

Professional rate

- The number of professional employees / the total number of employees

Technician rate

- The number of technical employees / the total number of employees

Clerical staff rate

- The number of clercial employees / the total number of employees

Gender diversity, Racial diversity, and Age diversity

- Blau index