

INFLUENCES OF ORGANIZATIONAL JUSTICE AND ORGANIZATIONAL
SUPPORT ON INNOVATIVE WORK BEHAVIOR IN
PUBLIC SECTOR EMPLOYEES

by

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(Under the Direction of Jay W. Rojewski)

ABSTRACT

Public sector organizations must address public demand for more efficient, effective, and open government, while simultaneously balancing the need to operate with limited financial and staff resources. One way public organizations can overcome these challenges is to become more innovative. This correlational study examined how public sector employees' perceptions of organizational justice and organizational support in their work environments and selected descriptive factors (i.e., age, gender, and educational level) contributed to an understanding of innovative work behavior. Data were obtained from a secondary analysis of publicly available data from the United States Office of Personnel Management, which conducts annual surveys of federal employees. The sample consisted of 421,748 employees from 82 federal agencies. Results showed that when public sector employees perceive that their organizations treat them fairly, value their contributions, and care about their well-being, they are more likely to engage in innovative work behavior. Innovative work behavior refers to the willingness to share novel ideas (idea generation), discuss those ideas with co-workers and leaders in their

organization (idea promotion), and work to implement those ideas (idea realization).

Both organizational justice and organizational support played direct roles in a federal employee's decision to engage in innovative work behavior. Selected descriptive factors - age, gender, and educational level - also were examined to determine the extent to which they explained federal employees' innovative work behavior. However, adding the selected descriptive variables did not improve the overall model, suggesting that they were relatively unimportant.

Findings from this study provide relevant information to managers, leaders, and politicians as they strive to make public sector organizations more efficient, effective, and adaptable to the social, economic, and political changes occurring in the 21st century. Results also provide key information to educators, human resource professionals, and others on how best to prepare the next generation of workers and workplaces to embrace innovation as a regular part of their job duties and responsibilities.

INDEX WORDS: Innovative Work Behavior, Organizational Justice, Organizational Support, Public Sector, Equity Theory, Social Exchange Theory

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DEDICATION

This dissertation is dedicated to my wonderful family who has been so supportive of me throughout this whole process. Special acknowledgement goes out to my sister and parents for their continual encouragement and faith in me as I worked to accomplish this academic goal. I also dedicate this dissertation to my friends and colleagues who helped me stay on track by constantly checking in on me and encouraging me.

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CHAPTER 1

INTRODUCTION

In today's highly competitive and dynamic work environment, public sector organizations face acute pressures to innovate, adapt, and improve products and services to achieve better outcomes and meet expanding citizen expectations. In the United States, citizens want government products and services that are fast, customizable, and innovative (Tapscott, 2009). When visiting government agencies such as the Motor Vehicles Department, citizens expect the same kind of service they get at McDonald's...quick, efficient, and courteous; when calling the Internal Revenue Service, citizens expect to be treated the same as if they were calling L. L. Bean or American Express (Altshuler & Behn, 1997). Moreover, citizens want choices and opportunities to collaborate (Tapscott, 2009).

Demographic and fiscal pressures, environmental changes, technological advances, increases in information and knowledge, changing citizen expectations, threats of terrorism and violence, public health crises, and global economic integration have emerged as substantial challenges for the public sector in the 21st century (Eggers & Singh, 2009; Nambisan, 2008). To be successful in addressing these challenges, public sector agencies and employees must innovate, adapt, and improve products and services to maximize effectiveness, achieve better outcomes, and be more open, collaborative, and participatory (Harris & Albury, 2009). Fostering an environment that encourages and utilizes employees' innovative work behavior is one way public sector agencies can be more efficient and effective as they meet 21st century demands.

Despite the attention placed on innovation in the business literature and practice, there is no commonly accepted definition of this construct. Rather, various definitions exist that emphasize different aspects of the concept including improvement of quality and efficiency of processes (Walker, 2014), introduction of new management methods and techniques (Meeus & Edquist, 2006), use of new technologies (Edquist, Hommen, & McKelvey, 2001), creation of new public services or products (Damanpour & Schneider, 2009), and, the introduction of new paradigms that explain specific problems and possible solutions (Bekkers, Edelenbos, & Steijn, 2011). Consistent with extant literature, innovation in the public sector refers to the introduction of new elements or incremental improvements either in the form of new knowledge, new management approaches, new or retooled processes, or new or restructured organizations that represent a change from the past (Axtell et al., 2000; Osborne & Brown, 2005; Rogers, 2003).

Innovation is closely tied to creativity, although there are important distinctions. Creativity involves the production of novel and useful ideas (Amabile, 1988; Mumford & Gustafson, 1988; Oldham & Cummings, 1996), and is often viewed as “doing something for the first time anywhere or creating new knowledge” (Woodman, Sawyer, & Griffin, 1993, p. 293). Amabile, Conti, Coon, Lazenby, and Herron (1996) found that while creative is a necessary precursor to innovation, it alone is not necessarily sufficient. For a creative idea to be an innovation and useful to an organization, it must be implemented. It has been argued that creativity in the workforce should be viewed as “a corporate necessity, not an add-on luxury” (Rickards, 1990, p. 40). Within this context, *creativity* refers to employees’ recognition of problems, exploration of opportunities in their work, and the generation of ideas that address corresponding changes and improvements.

Innovation builds on outcomes of creativity by promoting and realizing ideas through championing, coalition building, experimentation, and modification (Hammond, Neff, Farr, Schwall, & Zhao, 2011).

Public sector organizations are often viewed as being unable to innovate, even though there is some evidence that public agencies can be innovative (Sahni, Wessel, & Christensen, 2013; Wolf, 1997). A common preconception posits that public agencies are so bureaucratic and steeped in tradition that they cannot break loose from rules and regulations that constrain innovation (Morris & Jones, 1999; Sahni et al., 2013). And, some literature seems to support this belief. Wilson (1989) observed that public sector organizations are typically large bureaucratic structures performing tasks with stability and consistency, while resisting organizational disruption and change. Teofilovic (2011) noted that the idea of bureaucracy (i.e., public agencies and services) is synonymous with inefficiency and inertia.

Increased demands for accountability (i.e., requiring major decisions to achieve consensus through consultation interest groups and stakeholders) has been suggested as a primary reason for a lack of innovation in public sector employees and organizations (Morris & Jones, 1999). Another reason is a strong belief that public agencies lack the competitive forces and profit motives that drive private sector businesses to create new products and services (Bozeman & Bretschneider, 1994; Sahni et al., 2013). Many citizens assume that public sector employees are cautious and non-innovative. However, Rainey and Bozeman (2000) pointed out that research evidence supporting this view of public sector organizations and employees is inconclusive.

Businesses, governments, and society favor innovation, particularly around technology. The attraction toward innovation is based primarily on a desire for progress

over the status quo, the perception that new is better than old, and aspirations for a more advanced future (Cankar & Petkovsek, 2013; Mulgan, 2014). While some innovations bring immense good, others can bring both good and bad. The development and use of pesticides provides an example of an innovation that can be helpful on one hand, but harmful on another. While pesticides are used to kill parasites that destroy crops, they can also pollute the water supply.

Hoehn (n.d.) provided five reasons that organizations should innovate. First, innovation is necessary to remain competitive in the global marketplace where customers can with a simple Google search find lower prices, faster responses, more options, and better customer service. Second, innovation begets innovation. With each innovation, an organization learns new ways to adapt to customers' demands. Third, continued improvement and growth through innovation ensures that companies can attract and retain a strong workforce. Fourth, innovation is often in response to customer needs. Customers want to feel they are involved in the formation of new ideas and concepts that lead to new innovations. Finally, in today's highly-connected world, innovation keeps organizations relevant, adaptive, and ahead of competitors.

Innovative Work Behavior

According to de Jong and den Hartog (2010), innovative work behavior typically includes the exploration of opportunities and generation of new ideas (creativity-related behavior), but can also include behaviors directed toward implementing change, applying new knowledge or improving processes to enhance personal or business performance (implementation-oriented behavior). Innovative work behavior can range from incremental improvements in existing services to radically novel ideas that affect processes and procedures across an entire organization (Axtell et al., 2000). Innovative

work behavior is usually not part of the typical job for most employees. Rather, it is discretionary behavior not required or specified in a job description (Katz & Kahn, 1978), but nevertheless beneficial to an organization (Organ, Podsakoff, & MacKenzie, 2006). Examples of innovative work behavior include thinking in alternative ways, looking for areas in need of improvement, identifying new ways to accomplish tasks, seeking new technologies, applying new work methods, and identifying and securing resources to make new ideas happen (Amo & Kolvereid, 2005; de Jong & de Hartog, 2010; Fuller, Marler, & Hester, 2006).

Employee's innovative work behavior is crucial to many contemporary management principles—e.g., continuous improvement (Fuller et al., 2006), corporate entrepreneurship (Sharma & Chrisman, 1999), employee suggestion programs—because employees can create innovative solutions that otherwise would not be developed (Unsworth, 2001). Organizational scholars and practitioners have recognized the importance of viewing employees as a critical organizational asset including valuing an employees' willingness and ability to improve their work environment and performance through innovative work behavior (e.g., de Jong & den Hartog, 2007, 2010; Janssen, 2000; Oldham & Cummings, 1996; Scott & Bruce, 1994; Unsworth & Clegg, 2010; Xerri, 2014; Xu & Rickards, 2007).

In today's world, the capacity of an organization to innovate is particularly important for gaining a sustainable competitive advantage (Tidd & Bessant, 2009). Over the last few decades, globalization, rapid technological advancements, shorter product life cycles, new legislation, and increased competition has led to a situation where an organization encounters an environment that is characterized by unprecedented opportunities and challenges. In addition, price, quality, and customer satisfaction are

given enormous emphasis (Leifer, O'Connor, & Rice, 2001). This emerging scenario has created a continuous need for new ways of doing things. Organizations constantly must innovate or risk the possibility that competitors will take the lead in changing offerings, operational processes, or underlying business models (Tidd & Bessant, 2009).

Despite increased attention on innovation and innovative work behavior in organizational studies some issues demand further examination. Researchers have suggested that studies are needed on the contexts where innovation and innovative work behavior take place because the setting (e.g., public sector vs. private sector) can influence relevant variables or relationships among variables (Patterson, 2001; Rousseau & Fried, 2001). Because of the general thinking that public sector organizations are less innovative than those in the private sector (Mulgan, 2014), there is a need for research on innovation within the context of the public sector. This study focused on the public sector and, thus, helps fill this gap in the literature.

Researchers have posited that broad organizational factors (e.g., perception of fairness and a supportive organizational atmosphere and climate) must be present for creativity and innovative work behavior to flourish (Amabile et al., 1996; West, 2002; West & Farr, 1990). Exploring how organizational justice and organizational support factors influence the decision of public sector employees to act innovatively may also yield useful insights for understanding innovative behavior in the public sector.

Organizational Justice and Innovative Work Behavior

This study examined the relationship between organizational justice and the innovative work behavior of public sector employees. Organizational justice is defined as an employee's perception of fairness regarding their interactions in the workplace, the organization's formal policies and procedures, and relationships with colleagues and

supervisors (Aryee, Budhwar, & Zhen, 2002; Luo, 2007). The literature on innovative work behavior offers little information about the role of justice and fairness in stimulating workplace innovation. Therefore, an understanding of how organizational justice can encourage public sector employees to exhibit innovative work behavior is necessary. Specifically, are employees who believe they are treated fairly (e.g., with dignity and respect, equal enforcement of policies, justifications or explanations from colleagues and supervisors; Bies, 2005; Luo, 2007) more likely to engage in innovative work behavior?

Organizational Support and Innovative Work Behavior

Organizational support is the degree that employees believe their employing organization values their contributions, appreciates their efforts, and cares about their well-being (Edwards & Peccei, 2010; Rhoades & Eisenberger, 2002). There is a large body of literature examining organizational support; however, it provides incomplete insights into how perceived organizational support directly influences employee innovative work behavior. A meta-analysis conducted by Rhoades and Eisenberger (2002) found that perceived organizational support was associated with perceptions of fairness, supervisor support, organizational rewards, and favorable job conditions. Other research has found that organizational justice is positively related to perceived organizational support (Aryee et al., 2002; Masterson, Lewis, Goldman, & Taylor, 2000; Tekleab, Takeuchi, & Taylor, 2005). George and Zhou (2007) suggested that the supportive attitudes and behaviors of supervisors can create an environment where employees generate innovative ideas. This study examined the role of perceived organizational support on public sector employees' innovative work behavior. Specifically, are employees who perceive that an organization values their contributions,

supports them, and cares about their well-being more likely to engage in innovative work behavior?

Descriptive Factors and Innovative Work Behavior

This study also examined the relationship between selected descriptive factors—age, gender, educational level—and innovative work behavior. Evidence on how these three factors relate to innovative work behavior is mixed. Previous research found that older workers are often perceived as less creative, rigid, difficult to train, resistant to change, and less likely to engage in innovative work behavior (Bergh, 2001; Carmeli & Spreitzer, 2009; Janssen, 2004; Simsek, 2007). Other research has shown that older workers often develop greater knowledge and skills over time and, thus, may be more capable of innovation than their younger colleagues (Ng & Feldman, 2013).

Research on gender and innovative work behavior is also mixed. Some studies have suggested that men often have more opportunities than women to be involved in challenging activities that lend themselves to creative problem-solving and innovative solutions (Carmeli & Schaubroeck, 2007). In contrast, Leong and Rasli's (2014) research showed a lack of difference in the innovative work behavior and work role performance of employees based on gender.

Similarly, studies on education level suggest that higher educated employees display more innovative behavior (Janssen, 2000; Tierney & Farmer, 2004). However, Leong and Rasli (2014) failed to find differences in the innovative work behavior of individuals based on education. Learning how these descriptive factors relate to innovative work behavior will provide additional insight into what influences an employee's decision to act innovatively in the public sector.

Statement of Purpose

This correlational study examined how public sector employees' perceptions of organizational justice and organizational support in their work environments and selected descriptive (i.e., age, gender, and educational level) factors contribute to our understanding of their innovative work behavior. The criterion variable, innovative work behavior, describes actions that individuals take to voluntarily generate, promote, or apply new or adopted ideas within a work role, work unit, or organization to improve personal or organizational performance (Janssen, 2000; Scott & Bruce, 1994; Woodman et al., 1993). Predictor variables included organizational justice, organizational support, and selected descriptive factors (i.e., age, gender, and educational level). Organizational justice refers to an employee's perception of fairness in their workplace, an organization's formal policies and procedures, and relationships with colleagues and supervisors (Aryee et al., 2002; Luo, 2007). Organizational support is as the belief of employees that their organization cares about their well-being and values their work (Eisenberger, Huntington, Hutchinson, & Sowa, 1986). Descriptive factors examined include age, gender, and educational level.

Research Questions

1. What is the relationship of public employees with respect to levels of organizational justice, organizational support, and innovative work behavior?
2. What is the best set of factors among organizational justice, organizational support, and selected descriptive factors of age, gender, and level of education that explains public sector employees' innovative work behavior?

Theoretical Framework

Equity theory (Adams, 1965) and social exchange theory (Blau, 1964) help to explain how employees' perceptions of organizational justice and organizational support affect innovative work behavior. Together, these two theories hypothesize that employees evaluate the exchange relationship with their employing organization in terms of fairness, investments made, and rewards received at work. Exhibiting innovative work behavior is contingent on employees' perceptions of the possible gains or consequences of actions, as well as a supportive climate.

Equity Theory

Equity theory views individuals' experiences as either underpayment inequity (i.e., the ratio of inputs to outcomes is perceived to be less than others) or overpayment inequity (i.e., the ratio of inputs to outcomes is perceived to be more than others; Ivancevich, Matteson, & Konopaske, 2014). According to Adams (1965), underpayment inequity induces feelings of anger, while overpayment inequity induces feelings of guilt. Individuals are motivated to reduce inequity by either altering inputs (e.g., increasing or decreasing productivity), outcomes (e.g., seeking additional rewards), or withdrawing (e.g., tardiness, absence, turnover). People derive job satisfaction and are motivated by comparing their inputs (e.g., skills, education, characteristics, enthusiasm) and outputs (e.g., salary, benefits, recognition, advancement) with that of other people in the same organization (Ivancevich et al., 2014). Perceived fairness in the ratio between efforts and rewards signals that employees' abilities and contributions are recognized by the organization. As a result, employees are more likely to engage in innovative work behavior (Young, 2012). Likewise, perceptions of inequity create tension within

employees and drive individuals to take action that will reduce perceived inequity such as following the status quo instead of engaging in innovative work behavior.

Social Exchange Theory

Social exchange theory emphasizes the norm of reciprocity (Gouldner, 1960) and posits that social exchanges involve unspecified obligations in which a party receiving favorable treatment tends to return the favor. Social exchange is characterized by a series of interactions that over a period of time generate obligations and liberties between members in the workplace (Amo & Kolvereid, 2005; Blau, 1964; Cropanzano & Mitchell, 2005; Cropanzano, Prehar, & Chen, 2002; Maurer, Pierce, & Shore, 2002; Settoon, Bennett, & Liden, 1996). These interactions tend to be mutually dependent and contingent on a reciprocal relationship between two parties. Moreover, these reciprocal interactions, under the right conditions, can generate high quality relationships in the workplace (Maurer et al., 2002). Employees who are satisfied with outcomes of workplace exchanges are inclined to respond with greater performance, including innovative work behavior (Shaw, Dineen, Fang, & Vellella, 2009).

Extant Research on Innovative Work Behavior

Much of the extant research focuses on how and why private sector work environments, especially leadership, affect an organization's capacity to innovate rather than the role individuals play in organizational innovation (Amabile & Gryskiewicz, 1989; Scott & Bruce, 1994; West, 2002). Walker (2014) found that organizational-level innovation relates to the organization's structure, strategy, and administrative processes. Organizational-level innovation includes improvements or new changes to organizational practices or procedures and the introduction of new organizational structures. Other researchers have emphasized that interactions among employees and input from

individuals in the organization must occur for innovation to take place (Hargadon & Sutton, 2000). Van de Ven and Poole (1990) posited that the “process of innovation refers to the temporal sequence of events that occur as people interact with others to develop and implement their innovation ideas within an institutional context” (p. 32).

Although there is a growing body of literature regarding innovative work behavior, few studies have focused on employees in the public sector. In one of the few studies that focused on the public sector, Van de Ven and Poole (1990) and Wise (1996) found that innovation in the workplace relies on the innovative behavior of individuals in the organization, especially employees that work directly with the public. According to Wise (1996), employees who interact directly with clients gain better insights into what customers want and expect from public sector organizations and are often more aware of the factors that impede or undermine public service. Furthermore, individuals closest to the actual work of the public sector organization are in the best position to identify how problems can be solved or services can be improved, which underscores the need to understand innovative work behavior.

Understanding why employees engage in innovative work behavior is of great interest to scholars, researchers, and practitioners. In this study, the relationship between organizational justice and innovative work behavior was examined. Equity theory suggests that perceptions of fairness (e.g., ratio between effort spent and rewards received) are a job-related motivational base that influences the behavioral and affective responses of employees (Adams, 1965; Janssen, 2001; Mowday, 1991). Scholars have also applied a social exchange theory framework to research on organizational justice and posited that perceptions of justice or fairness is associated with favorable employee attitudes and work behavior, a stronger commitment to the organization, and higher

overall job performance (Cropanzano et al., 2002; Masterson et al., 2000; Rhoades & Eisenberger, 2002).

The relationship between organizational support and innovative work behavior is also of importance. Organizational support refers to the “global beliefs kept by employees concerning the extent to which the organization values their contributions and cares about the well-being” (Eisenberger et al., 1986, p. 501). There is general agreement that, at minimum, well-being includes the presence of positive emotions and moods (e.g., contentment, happiness), the absence of negative emotions (e.g., depression, anxiety), satisfaction with life, fulfillment, and positive functioning (Ryff & Keyes, 1995). Employees that believe an organization values their contributions and cares about their well-being is more likely to engage in innovative work behavior. According to equity theory, employees evaluate the exchange relationship within an organization in terms of investments made and rewards received (Adams, 1965; Janssen, 2001). Specifically, Janssen (2001) found that employees tend to react destructively when they feel they are in an inequitable exchange relationship. Social exchange theory is also frequently used to explain motivators of individuals’ perceptions of organization support (Allen, Shore, & Griffeth, 2003; Anand, Vidyarthi, Liden, & Rousseau, 2010). Using social exchange theory, research has shown that employees who experience high levels of perceived organizational support reciprocate more positively to the organization (Madden, Mathias, & Madden, 2015).

Importance of Study

Evidence exists that organization justice and perceived organizational support result in better organizational outcomes, e.g., reduced absenteeism, positive citizenship behaviors, increased job satisfaction, reduced employee turnover (Allen et al., 2003;

Eisenberger et al., 1986; Schilpzand, Martins, Kirkman, Lowe, & Chen, 2013; Xerri, 2014). However, no studies were identified that examine how organizational justice and organizational support influence the innovative work behavior of public sector employees. To address this gap in the literature, this study explained and empirically tested how employee perceptions of organizational justice and organizational support influence innovative work behavior in public sector employees.

This study makes a positive difference in the public sector workplace in multiple ways. First, it expands the knowledge on how equity theory and social exchange theory can be used to understand what influences a public sector employee's decision to engage in innovative work behavior. Second, this study explains the effect perceptions of justice/fairness and organizational support can have on public sector employees' decision to engage in innovative work behavior.

Findings from this study provide relevant information to managers, leaders, and politicians as they strive to make public sector organizations more efficient, effective, and adaptable to the social, economic, and political changes occurring in the 21st century. Results also provide key information to educators, human resource professionals, and others on how best to prepare the next generation of workers and workforces to embrace innovation as a regular part of their job duties and responsibilities.

CHAPTER 2

LITERATURE REVIEW

This chapter reviews the central concepts and theories relevant to the study of organizational justice, organizational support, and innovative work behavior on the part of public sector employees. The chapter begins with a review of innovation and innovative work behavior, the central concept of this study. The next section examines the theoretical foundation of the work, which builds on the principles of equity theory (Adams, 1965) and social exchange theory (Blau, 1964; Gouldner, 1960). According to these two theories, employees evaluate their exchange relationships with an organization in terms of unspecified obligations (i.e., where one party who receives favorable treatment from another tends to return the favor) as well as investments and rewards received at work (Blau, 1964; Settoon et al., 1996). Finally, the last section defines organizational justice and organizational support and focuses on their effects on innovative work behavior. The effects of descriptive factors—i.e., age, gender, and educational level—on innovative work behavior also are addressed.

Innovative Work Behavior

In the public sector, today's citizens want more choices, opportunities to collaborate, and products and services that are fast, customizable, and innovative (Borins, 2014; Robinson, 2015; Tapscott, 2009). Further, they expect public sector agencies to live within their means, be transparent, and make information about operations and decisions readily available. Traditional public sector solutions that focus on structural issues and *command and control* leadership often are perceived to be insufficient or

ineffective, which highlights the need for new, more innovative solutions (Robinson, 2015). Economists, political scientists, and organizational theorists have asserted that public sector agencies need to take immediate and bold action to encourage innovation (Borins, 2014; Burke, 2014; Eggers & Singh, 2009; Harris & Albury, 2009).

Innovation and Innovative Work Behavior

Innovation long has been considered a human behavior and the concept has evolved through research in various areas from economics, management science, communications, and anthropology, to psychology and sociology (West & Farr, 1990). There are numerous definitions of innovation in the private sector. The most common describes innovation as “implementation of a new or significantly improved product (good or service), a new process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations” (Cornell University, INSEAD, and the World Intellectual Property Organization, 2016, p. 49). In the private sector, innovation is realized through the creation of better products, services, processes, technologies, and complex ideas (Fatur & Likar, 2009). Innovation in the *public* sector is similar to that in the private sector, but also accounts for two additional factors: (1) innovation is not just an idea; it must be implemented, and (2) innovation must result in significant changes in existing practices (Cankar & Petkovsek, 2013). Public sector innovation involves creating, developing, and implementing ideas that benefit the public, are new, at least in part, rather than just an improvement, and are implemented and useful.

Traditionally, the terms *innovation* and *public sector* rarely have been used together. The concept of innovation is almost synonymous with private sector activities, while the public sector is perceived as adverse to innovation. In fact, the public sector

often is viewed as having a culture of risk aversion and bureaucracy, and being bound by traditions that result in an inability to free itself from rules and regulations that constrain innovation (Sahni et al., 2013). Citizens assume that public sector employees are cautious, non-innovative, and unwilling to accept change. Moreover, there is a strong belief that public agencies lack the competitive forces and profit motive that drive private sector businesses to create new products and services (Bozeman & Bretschneider, 1994; Sahni et al., 2013). Increased demands for accountability to the public it serves (i.e., greater transparency, consensus decision-making) is another reason public sector organizations are characterized as not very innovative (Morris & Jones, 1999). Public sector agencies often are unable to meet citizens' demands to provide transparent data quickly and detailed information that is complete and accurate, even given today's technological tools. Similarly, involving multiple stakeholders in consensus decision-making often is perceived to further public bureaucracy and the appearance that nothing gets done.

Private sector innovation generally is motivated by profit or growth; thus, revenue and market share usually dictate and reflect the level of innovation efforts, as well as the level of resources devoted to innovative activities (Burke, 2014). Output typically is a product, solution, or service that meets an unmet or under-met need. In contrast, innovation in the public sector usually is dictated largely by societal challenges, such as the quality of education, crime and terrorism, promotion of public health, delivery of welfare and other social programs, management of national parks, and stimulation of economic growth (Borins, 2014; Eggers & Singh, 2009).

Many of these problems are complex and difficult to solve (i.e., climate change, aging population, deteriorating infrastructure). The approaches agencies adopt to cope

with problems have consequences, both for the problem addressed and the organization trying to solve it (Borins, 2014). Citizens have many opportunities to express their dissatisfaction with potential innovative solutions, especially in today's world of instant communication and social media. No matter how good an innovative solution may appear, public opinion can have a restraining effect on its implementation (Eggers & Singh, 2009).

Innovative work behavior is defined as the intentional introduction, promotion, and realization of new ideas within a work role, work group, or organization that benefits role performance, the group, or the organization (West & Farr, 1990). Scholars have posited that innovative work behavior integrates both creativity and novel thinking as a set of tasks essential for innovation (Janssen, 2000; Kanter, 1983; Scott & Bruce, 1994). Innovative work behavior is intended to generate benefits and, therefore, has an applied component (de Jong & den Hartog, 2007). Thus, researchers have agreed that it encompasses employee creativity, i.e., the generation of new and useful ideas about products, services, processes, and procedures (Amabile, 1988), and their implementation (Anderson, de Drew, & Nijstad, 2004; Axtell et al., 2000).

Innovative work behavior and employee creativity are closely related. Similarly, innovation and creativity are linked and proceed together. Because creativity involves the production of novel and useful ideas (Amabile, 1988; Oldham & Cummings, 1996), it often is viewed as “doing something for the first time anywhere or creating new knowledge” (Woodman et al., 1993, p. 293). West (2002) posited that creativity is a crucial component of innovative work behavior, and is most evident at the beginning of the innovative process, when problems or performance gaps are recognized and ideas are generated in response to a perceived need.

Scholars maintain that it is individuals—rather than other organizational factors, such as processes and procedures, structure, products, or earnings—that lead to the consideration and implementation of new ideas (Janssen, Van de Vliert, & West, 2004; Scott & Bruce, 1994). Innovative work behavior usually is not part of most employees' work. Rather, it is discretionary behavior that benefits the organization, but is neither required nor specified in employees' job descriptions (Katz & Kahn, 1978; Organ et al., 2006). Employees' innovative work behavior is crucial to many contemporary management principles, such as continuous improvement (Fuller et al., 2006), corporate entrepreneurship (Sharma & Chrisman, 1999), and employee suggestion programs (Unsworth, 2001).

Our understanding of innovation has evolved through research in numerous academic fields, e.g., economics, business, science and technology, and sociology. The concept of innovative work behavior differs from the more general idea of innovation. Innovation refers to the *result* of an idea coming to fruition, while innovative work behavior is the *process* the idea undergoes from initial idea generation to implementation (de Jong & den Hartog, 2010), and can range from incremental improvements to radically novel ideas that affect processes and procedures throughout an organization (Axtell et al., 2000). Radically novel innovations are rare, usually are more complex, and often require teamwork based on specific knowledge, competence, and work roles. Normally, only employees who work in research and development (R&D) can contribute in such a manner. Smaller-scale suggestions and incremental improvements are much more common, and generally address employees' concerns in areas other than R&D. Examples of innovative work behavior include thinking in alternative ways, looking for areas that need improvement, identifying new ways to accomplish tasks, seeking new

technologies, applying new work methods, and identifying and securing resources necessary to realize new ideas (Amo & Kolvereid, 2005; de Jong & den Hartog, 2010; Fuller et al., 2006).

Scholars continue to debate the best way to conceptualize innovative work behavior. Some have suggested that it is a one-dimensional construct, while others believe that a multi-dimensional construct is required. For many, innovative behavior in the workplace consists of a set of three behaviors or innovation tasks: idea generation, promotion, and realization (de Jong & den Hartog, 2010; Janssen, 2000; Scott & Bruce, 1994). *Idea generation* involves creating and suggesting new, applicable, and potentially useful products or processes that address identified opportunities. *Idea promotion* reflects championing the ideas by building a coalition of allies that takes responsibility and provide necessary information, resources, and support for the innovation. *Idea realization* involves experimenting with new ideas, creating a prototype of the innovation, examining and improving it, and planning the strategic integration of the new idea into organizational practice.

All three tasks (generation, promotion, and realization) are interdependent (e.g., ideas address opportunities identified; promotion and realization rely on the ideas generated), and are connected by feedback loops (e.g., promotion of an idea may lead to new opportunities and realization may lead to further ideas), and, therefore, do not follow a linear sequence (Dorenbosch, van Engen, & Verhagen, 2005). Further, individuals may be involved in the accomplishment of one or more of these tasks simultaneously and repeatedly (Scott & Bruce 1994), which leads to a complex, iterative, non-linear model of innovation development. There is consensus in the literature that innovation processes are characterized by discontinuous activities (Kanter, 1988; Schroeder, Van de Ven,

Scudder, & Polley, 1989); thus, individuals can be expected to be involved in one or more of the three behaviors or tasks in any combination at any time (Scott & Bruce, 1994).

Innovative work behavior can be characterized as both dynamic and context-bound. It is considered dynamic because of the complex way an employees' past work activities and outcomes can affect present and future innovative behavior. According to Zhou and Shalley (2003), it is difficult to be innovative when one is isolated or surrounded only by people inside the organization. Specifically, employees can enrich their pool of ideas and innovative results by having frequent contacts with people (e.g., a discussion with a colleague may help identify a problem, generate solutions, or promote an idea already in one's head) and exploring different environments. It is context-bound because personal and organizational factors become meaningful and influence work activities and outcomes only within the work context.

Zhou and Shalley (2003) found that the implications of the dynamic and context-bound nature of innovative work behavior might not always be explicit. They posited that *reflection* on the process of innovation development should be considered a fourth innovation task. Reflecting on ideas, strategies, activities, and outcomes contributes to the entire process of innovation development (Muller, Herbig, & Petrovic, 2009), and reflecting on work activities and outcomes helps employees regulate and improve their personal performance (van Woerkom, 2004). For example, by reflecting on outcomes of their current activity, employees can improve their knowledge and skills as they relate to comparable future activities. Current activities also can be carried out by reflecting on similar activities in past experiences.

While innovative work behavior can be conceptualized as a multi-dimensional construct, most existing measures focus on a single element and thus, view it as one-dimensional (Basu & Green, 1997; Bunce & West, 1995; Scott & Bruce, 1994; Spreitzer, 1995). Scott and Bruce (1994) developed a six-item innovative work behavior scale that measured multiple behaviors, but the authors did not attempt to separate them. Spreitzer (1995) and Basu and Green (1997) used four-item measures for their one-dimensional innovative work behavior measure. In addition, Bunce and West (1995) used a five-item scale to measure innovative behavior as a one-dimensional construct.

More recent research has considered innovative work behavior a multi-dimensional construct (Dorenbosch et al., 2005; Krause, 2004). Both Janssen (2000) and Kleysen and Street (2001) used a multi-dimensional measure in which they attempted to measure the three different behaviors/tasks separately: idea generation, promotion, and implementation. However, after finding strong correlations between the three, they concluded that the scores should be combined and used as a single additive scale. Krause (2004) and Dorenbosch et al. (2005) presented multi-dimensional measures that focused on two behavioral tasks successfully, idea generation and implementation.

In this study, innovative work behavior was treated as a one-dimensional construct based on several factors. First, I used archival data that did not distinguish between the different behaviors or innovative tasks (idea generation, promotion, and implementation). Second, my study focused on the broader conceptualization of innovative work behavior rather than on discrete behaviors or innovation tasks. Third, this approach was consistent with the literature.

Importance of Innovation and Innovative Work Behavior

Organizational theorists have highlighted the integral role innovation plays in an organization's efforts to remain competitive in environments where the only constant is change (Burke, 2014). Amabile (1997) indicated that no organization should expect to remain viable if the goal is to deliver the same products or services in the same way time and time again. Similarly, Porter (1990) found that a nation's competitiveness is contingent on the extent to which industries can innovate and improve productivity. To date, innovation efforts in the public sector have focused primarily on improving the quality of services and enhancing governmental agencies' problem-solving ability to address societal challenges (Damanpour & Schneider, 2009). Public sector innovation often is linked to organizational reform movements, such as total quality management (Swiss, 1992), transition from government to governance (Rhodes, 1996), electronic government (Bekkers & Homburg, 2007), lean six sigma (Finch & Rollins, 2010), new public management (Pollitt & Bouckaert, 2011), and discussions of the role of government in the *Big Society* (Lowndes & Pratchett, 2012).

Innovation, and innovative work behavior, in particular, are important because they: (1) reduce costs and increase productivity/service provision; (2) ensure organizations remain competitive in today's global economy; (3) enhance an organization's ability to adapt to changing environments, which may be legislative, technological, social, economic, and physical; (4) inject new life into slow or stagnant markets or other operational areas, thereby facilitating entry into new markets or areas, and (5) help promote an organizational culture of creativity that, among other things, can help attract high quality, creative staff (Borins, 2014; Damanpour & Gopalakrishnan, 1998; Hargadon & Sutton, 2000; Mulgan, 2014; Slater, Mohr, & Sengupta, 2014).

Identifying what makes something innovative can be difficult. For some, it is about simple changes, incremental decisions, and refinements. For others, it involves a new or radical idea. In a blog post, Owen (2012) shared various responses of business leaders with respect to what they look for in terms of innovation, several of which are provided below:

“Something innovative does not necessarily need to solve a previously unsolvable problem; an innovative idea often solves an existing problem in a cheaper or better manner”—Ken Leung, *Euclid Elements*.

“Something that evokes the following response time and time again: Damn it! That’s such a blindingly simple idea. I wish I’d thought of it first”—Francesca Underhill, *Naked Wines*.

“You know it when you see it. As a punter, you find yourself saying ‘oh, that’s good’”— Jake Lingwood, *Random House*.

“Real innovation is something that is literally out of the box, a completely new way of thinking, solving a problem, or taking something that is existing to the next level”—Megan Bradley, *Covari*.

Innovation is crucial for any organization to remain competitive and successful in the global marketplace (Borins, 2014; Mulgan, 2014; Reuvers, Van Engen, Vinkenburg, & Wilson-Evered, 2008). Although public services and activities do not exist within traditional competitive business environments, there are important reasons to encourage innovation in the public sector. Society is becoming increasingly diverse and individuals today demand better quality and more efficient public services. Innovation also can enhance the reputation and image of governmental agencies by enabling them to deliver such services (Borins, 2014). Moore (1995) argued that a public organization will be

more valuable if it can adapt to new aspects of its mission, or produce new products and services valuable to society.

Influencing Innovative Work Behavior

Within the context of the public sector, Van de Ven and Poole (1990) and Wise (1996) found that organizational innovation relies on all individuals' efforts, particularly employees closest to the actual work of the organization. According to Wise (1996), employees who interact directly with clients obtain better insights about what customers want and expect from public sector organizations, and often are aware of factors that impede or undermine the effectiveness of public services. Thus, public sector employees closest to the actual work of the organization are in the best position to identify ways that problems can be solved or services improved.

Organizations must work to encourage and use their employees' creative energy and innovative work behavior (Amabile, 1988; Carrier, 1996; Oldham & Cummings, 1996). Thus, understanding the factors that influence an employee's decision to engage in innovative work behavior is of great interest to scholars, practitioners, and others. Much of the extant research on innovation and innovative work behavior has focused on how and why private sector work environments, especially an organization's leadership, affect its capacity to innovate, rather than the role individuals play in organizational innovation (Amabile & Gryskiewicz, 1989; Scott & Bruce, 1994; West, 2002). Walker (2014) referred to organization-level innovation as activities related to the organization's structure, strategy, and administrative processes, such as improvements to practices or procedures, and the introduction of new organizational structures. Other theorists have emphasized that interaction and input from individuals within an organization must take place for innovation to occur (Hargadon & Sutton, 2000). For example, Van de Ven and

Poole (1990) posited that the “process of innovation refers to the temporal sequence of events that occur as people interact with others to develop and implement their innovation ideas within an institutional context” (p. 32). Given the critical role individuals play in an organization’s ability to be innovative, it is essential to develop and encourage employees’ innovative potential (e.g., Amabile, 1988; Oldham & Cummings, 1996). Moreover, an organization that strives to achieve a continuous flow of individual innovation must ensure that its employees are both willing and able to innovate (de Jong & den Hartog, 2010).

Although research on the determinants of innovative work behavior is limited, previous studies provide some insight. Li and Zheng (2014) found that employees’ motivation to engage in innovative work behavior can be divided into internal and external factors. Internal factors refer to individuals’ personal traits, as well as their ability to participate in innovative activities. External forces refer to organizational factors, such as an open team environment and leaders’ support. Other research has shown that employees’ perceptions of the possible gains or consequences of their actions, as well as the climate in which they are operating, influence the likelihood that they will behave innovatively (Isaksen, Lauer, & Ekvall, 1999; Scott & Bruce, 1994; Yuan & Woodman, 2010).

Theoretical Foundations

Equity theory and social exchange theory served as the framework for this study. While many references are decades old, they reflect the seminal writings of researchers who developed the theories initially, and are cited commonly in scholarly articles that involve those theories even today.

Equity Theory

Equity theory (Adams, 1965) states that it is important to strike a reasonably equal balance between outputs and inputs. If the balance lies too much in favor of the employer, some employees may work on their own to achieve a better balance (i.e., by asking for additional compensation or recognition), while others are likely to lose motivation (Ivancevich et al., 2014). Equity theory supports the idea that inequities (perceived or real) reduce employee motivation (Janssen, 2001; Pinder, 2008). When inequities persist, employees may engage in negative output behaviors, for example, decreasing inputs by devoting less time or doing less work; performing their jobs and little more (survival mode); becoming overly competitive by attempting to reduce the outputs of others, or leaving the organization (Ivancevich et al., 2014). The equity theory is effective in explaining why employee perceptions about fairness are important and researchers should consider them (Janssen, 2001). When employees believe that the workplace is unfair, they grow to distrust organizational leadership. When leaders choose to ignore this distrust, employee morale and motivation suffer (Pinder, 2008).

Janssen (2001) used the equity theory framework to examine the effect of perceptions of fairness on the curvilinear relationships between job demands, performance, and satisfaction. He proposed that managers who perceive that job effort and rewards are balanced perform better and feel more satisfied with job demands than do those who perceive an imbalance. In a separate study, Janssen (2004) examined the way in which perceptions of distributive and procedural fairness moderated the relationship between innovative work behavior and stress. Using both equity theory (Adams, 1963; Ivancevich et al., 2014; Janssen, 2001) and social exchange theory (Blau, 1964; Gouldner, 1960), Janssen (2004) proposed that the extent to which innovative work

behavior is stressful for employees is contingent upon their perceptions of the distributive fairness in the exchange relationship with the organization. A survey of 118 front-line managers in six organizations in the public health domain demonstrated that innovative work behavior was related positively to stress reactions, job-related anxiety, and burnout only when levels of both distributive and procedural fairness were low.

The literature describes several strengths and weaknesses of the equity theory. First, it has been used successfully to predict behavior (Janssen, 2001, 2004; Pinder, 2008). Second, the theory makes intuitive sense, as it is reasonable to assume that people generally compare their own inputs and outputs to those of others. Finally, the theory fits well with others, such as the social exchange theory. Both the social exchange and equity theories represent a cognitive approach to motivation and describe the way in which individuals adjust themselves (motivation) when they perceive their efforts may obtain outcomes that are consistent with their expectations (Pinder, 2008). The assumption is that people calculate costs and benefits in determining a course of action (Stecher & Rosse, 2007). In both theories, the thinking is that individuals will be motivated when they perceive that their efforts will lead to the reward they expect, such as money or recognition.

With respect to weaknesses, equity theory suggests a variety of strategies that an individual may use to restore equity, but does not predict in detail which options s/he will choose (Ivancevich et al., 2014; Pinder, 2008). Further, various factors that are not under the direct control of administrators, managers, or the organization may lead to inequity. Thus, the equity theory often is better in providing an explanation after the fact rather than predicting behavior (Stecher & Rosse, 2007). Lastly, human perception is flawed,

and thereby exposes any perceived equity or inequity of outputs and inputs to similar inaccurate perceptions (Pinder, 2008; Stecher & Rosse, 2007).

Social Exchange Theory

Exchange theory, more specifically, the social exchange theory, often is used as the framework for research on organizational behavior and is referenced in various bodies of literature, including economics, sociology, interpersonal and organizational relationships, leadership, justice, and organizational behavior. In its purest form, exchange theory suggests that obligations and expectations between parties are the natural result of repeated interactions. Blau's (1964) seminal work posited, "Not all human behavior is guided by considerations of exchange, though much of it is, more than we usually think" (p. 5). The basic premise in exchange theory originates from Thibaut and Kelley's (1959) theory of interdependence, which posits that individuals consider the potential value of the outcomes associated with each behavioral option before acting. Exchange theory can be conceptualized further with respect to economic and social exchanges. From an economics perspective, exchange refers to specific obligations that can be converted into cash that one party owes another in exchange for services provided. This type of exchange is described frequently as contractual (Sparrowe & Liden, 1997), because the terms of an economic exchange often are bound by what is specified in a relevant agreement.

Social exchange theory emphasizes the norm of reciprocity (Gouldner, 1960), and posits that social exchanges involve unspecified obligations, i.e., one party who receives favorable treatment from another tends to return the favor (Blau, 1964; Janssen, 2004). Social exchange theory focuses on unspecified social commodities that are exchanged based on providing something valuable to the other party, and trusting that they will

reciprocate with something valuable to the giver. These rewards can be tangible and have a value distinct from any relationship, such as gifts, advice, or assistance with a project, or they can be intangible and have value based on what they represent about a relationship, such as respect, approval, or support. In contrast to the explicit nature of obligations that are products of economic exchange, terms of social exchange generally are unspecified (e.g., Blau, 1964; Konovsky & Pugh, 1994; Masterson et al., 2000). Stated simply, economic exchange is based on transactions, while social exchange relationships are based on individuals' trust that other parties in the exchange will discharge their obligations fairly in the end (Lerner, 1981). The expectation of long-term fairness in social exchange contrasts with the expectation of short-term fairness that typically characterizes economic exchange. In addition, relationships based on the exchange of social rewards are considered to have a higher quality than are those based strictly on economic exchange (Anand et al., 2010).

Blau's (1964) work provided an in-depth examination of the nature of social exchange, including the way in which it develops and influences behavior. Associations between two individuals or between an individual and group develop from the anticipation that a relationship will be rewarding. The more rewarding a relationship appears by comparison to alternatives, the stronger it will be. Blau (1964, p. 91) defined social exchange as "voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others." If employees receive favorable treatment from their organizations, they tend to feel obligated to reciprocate, although the time and form of the return may be unclear (Gouldner, 1960). According to social exchange theory, individuals may change their attitudes or behaviors, depending on the way in which they perceive their treatment, or on their need for

reciprocity (Blau, 1964; Cropanzano & Mitchell, 2005). In this context, employees who perceive that an organization is treating them unfairly are likely to respond negatively by decreasing their discretionary behaviors (Gregory, Osmonbekov, Gregory, Albritton, & Carr, 2013).

The literature describes several strengths and weaknesses of the social exchange theory. A few of the strengths found commonly include: (1) it is relatively easy to understand and implement, as it adopts basic economic concepts that the public generally understands and practices; (2) it uses a behavioral approach to explain relationships, and (3) it promotes logical thinking (i.e., exchanges between parties). With respect to weaknesses, social exchange theory (1) assumes individuals apply reason and economic logic in decision making, which may not always be the case; (2) does not define the central concepts of the theory—costs and rewards—clearly; (3) fails to explain some human actions (e.g., unselfishness, humanitarian actions, group solidarity, etc.), and (4) assumes hierarchical development of relationships, when in fact relationships sometimes progress and retreat in a way that skips or repeats normal hierarchical stages (Sabatelli & Shehan, 1993; West & Turner, 2014).

This study used both equity theory and social exchange theory to explain the way in which an employee's perceptions of organizational justice and support influence his/her decision to demonstrate innovative work behavior. Social exchange theory emphasizes the norm of reciprocity (Gouldner, 1960). The basis of this theory is the concept that individuals who receive a favor of some sort feel obliged to return the favor (Blau, 1964; Gouldner, 1960). Social exchange theory also applies to the workplace, where employees who feel that their organization supports them may be motivated to reciprocate. Social exchange is characterized by a series of interactions that generate

obligations and liberties between members in the workplace over time (Cropanzano, & Mitchell, 2005; Maurer et al., 2002). These interactions tend to be mutually dependent and contingent on the reciprocal relationship between two parties. Moreover, under the right conditions, these reciprocal interactions can generate high quality relationships in the workplace (Maurer et al., 2002). Further, employees who are satisfied with the outcomes of their workplace exchanges are more inclined to respond with greater performance, including exhibiting innovative behavior (Shaw et al., 2009). There are various ways in which employees may reciprocate the organization's favorable treatment (i.e., treating other employees fairly, and supporting and valuing them), and by engaging in innovative work behavior.

Theorists have found that organizations must work to encourage and use their employees' creative energy and innovative work behavior (Amabile, 1988; Oldham & Cummings, 1996). Although there is a growing body of literature about innovation in the workplace, few studies have focused on the public sector. Within this context, Van de Ven and Poole (1990) and Wise (1996) found that organizational innovation relies on the innovative behavior of individuals, particularly employees who work directly with the public. According to Wise (1996), such employees understand better what customers want and expect from public sector organizations, and often are more aware of the factors that impede or undermine the effects of public service

In summary, this dissertation research was designed to contribute to the current literature by using equity theory and social exchange theory to examine the way in which employees' perceptions of organizational justice and support influence innovative behavior in the public sector, which improves our understanding of innovation in that sector. Findings from this study provide relevant information to managers, leaders, and

politicians as they strive to make public sector organizations more efficient, effective, and adaptable to the social, economic, and political changes in the 21st century. Results also provide key information to educators, human resource professionals, and others about the best ways to prepare the next generation of workers and workplaces to embrace innovation as a regular aspect of their job duties and responsibilities.

Predictor Variables

Broad organizational factors (e.g., perception of fairness and a supportive organizational atmosphere and climate) must be present for creativity and innovative work behavior to flourish (Amabile et al., 1996; West, 2002; West & Farr, 1990). However, there is little information in the literature on the roles that justice or fairness play in motivating employees to engage in such behavior. Thus, exploring the ways in which organizational justice and organizational support factors influence public sector employees' decisions to act innovatively can yield useful insights about innovation in the public sector.

Organizational Justice

Understanding what influences employees to engage in innovative work behavior is of great interest to scholars, researchers, and practitioners. Therefore, this study examined the relationship between organizational justice and innovative work behavior. Organizational justice refers to individuals' perceptions of fairness in their workplace outcomes (distributive), the organization's formal policies and procedures (procedural), and relationships with colleagues and supervisors or treatment received at work (interactional: Aryee et al., 2002; Luo, 2007). Justice or fairness refers to the idea that an action or decision is morally right according to ethics, religion, equity, or law. Individuals react to actions and decisions made by organizations daily, and an

individual's perception of the degree of fairness of these decisions can influence subsequent attitudes and workplace behaviors (Erdogan, Liden, & Kraimer, 2006).

Theorists have suggested that when employees believe their organization is fair, they will be more likely to engage in activities that benefit it (Greenberg & Colquitt, 2006).

Scholars have applied a social exchange theory framework to study in organizational justice and have posited that perceptions of justice or fairness can affect an employee's attitudes and work behavior, organizational commitment, and performance overall (Cropanzano et al., 2002; Masterson et al., 2000; Rhoades & Eisenberger, 2002).

This research examined the relationship between organizational justice and innovative work behavior on the part of public sector employees. Organizational justice is defined as an employee's perception of fairness with respect to his/her interactions in the workplace, the organization's formal policies and procedures, and relationships with colleagues and supervisors (Aryee et al., 2002; Luo, 2007). It is important to examine the concept of organizational justice briefly and how it will be used in this study.

Traditionally, organizational justice has been conceptualized by differentiating the construct into its components: distributive, procedural, and interactional justice (Colquitt, 2001; Greenberg, 1996). *Distributive justice* refers to an employee's perceptions of fairness with respect to the outcomes that an individual experiences in an organization (Tyler, 1994). *Procedural justice* refers to their perceptions of fairness with respect to the organization's policies and procedures (Nabatchi, Bingham, & Good, 2007). Finally, *interactional justice* refers to their perceptions of fairness with respect to their interactions in the workplace (Bies, 2005; Bies & Moag, 1986).

Differentiating between these three components is useful when studying the way in which the different types can arise. However, empirical studies have shown that the

three components tend to be correlated and often work together to influence employees' attitudes and behaviors (Sweeney & McFarlin, 1993; Tyler & Bies, 1990). In recent years, some researchers have proposed that the singular focus on the effects of specific types of justice may not capture the depth and richness of individuals' justice experiences (Ambrose & Schminke, 2009). According to Ambrose and Arnaud (2005), the underlying interest in the conceptual status of different types of justice should not be on the way in which they differ, but in the way in which they are related. Further, the focus on individual constructs often leads researchers to ignore the interdependence among the different types.

To address this issue, researchers recommend a shift to an overall construct of organization justice to achieve a complete understanding of justice and its effect on employees (Nicklin, McNall, Cerasoli, Strahan, & Cavanaugh, 2014). An overall construct of organization justice assumes that the organization is the common source and the single focus of the organizational members' perceptions of justice (Nicklin et al., 2014).

This research examined the construct of organizational justice overall based on the following factors. First, the archival data used in this study did not distinguish between the three types of organizational justice (distributive, procedural, and interactional) behaviors. Second, the study focused on the broader conceptualization of organizational justice rather than on its different components. Third, this approach is consistent with the literature and will provide a more complete understanding of justice and its effects on public sector employees.

Despite the evidence that has shown that organizational justice motivates employees to have positive attitudes and engage in behaviors that benefit their

organizations (Greenberg & Colquitt, 2006), the literature on innovative work behavior offers little information about the roles of justice and fairness in stimulating employees to be more innovative. Thus, this study investigated the influence of organizational justice on public sector employees' willingness to exhibit innovative work behavior.

Specifically, the study hypothesized that employees who believe they are treated fairly (e.g., with dignity and respect, equal enforcement of policies, justifications or explanations from colleagues and supervisors: Bies, 2005; Luo, 2007) are more likely to engage in innovative work behavior.

Organizational Support

The relationship between organizational support and innovative work behavior was also examined. Organizational support refers to the “global beliefs kept by employees concerning the extent to which the organization values their contributions and cares about the well-being” (Eisenberger et al., 1986, p. 501). Researchers have used social exchange theory to explain what drives individuals' perceptions of organizational support (Allen et al., 2003; Anand et al., 2010). From that perspective, the extent to which employees believe the organization supports them, for example, by implementing effective organizational policies and operations, providing resources needed, and professional development opportunities, influences whether they feel that their organization cares about them (Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001). In turn, employees who experience high levels of perceived organizational support will reciprocate on behalf of the organization (Madden et al., 2015).

There is a large body of literature on organizational support. However, insights about its influence on employee innovative work behavior are incomplete. Rhoades and Eisenberger's (2002) meta-analysis indicated that perceived organizational support was

associated positively with fairness, supervisor support, organizational rewards, and favorable job conditions. Organizational justice also has been found to be related positively to perceived organizational support (Aryee et al., 2002; Masterson et al., 2000; Tekleab et al., 2005). This research sought to understand the direct role organizational support plays in stimulating public sector employees to exhibit innovative work behavior. Specifically, the study proposed that employees who perceive that an organization values their contributions, supports them, and cares about their well-being, are more likely to engage in innovative work behavior.

Descriptive Factors

This study also examined the relationship between selected descriptive factors, age, gender, and educational level, and innovative work behavior. Determining the way in which the level of these descriptive variables are related to innovative work behavior provided additional insight about the influences on employees' decisions to act innovatively.

Age. Previous research has suggested that older workers often are perceived as less creative, more rigid and difficult to train, and more resistant to change, and thus, less likely to engage in innovative work behavior (Bergh, 2001; Carmeli & Spreitzer, 2009; Janssen, 2004; Simsek, 2007). On the other hand, some researchers have argued that older workers often develop greater knowledge and skills over time and thus, might be more capable of innovation than are their younger colleagues (Ng & Feldman, 2013).

Gender. Results of research on the way in which gender may influence innovative work behavior is mixed. Carmeli and Schaubroeck (2007) demonstrated that men often have more opportunities than do women to be involved in challenging activities that lend themselves to creative problem solving and innovative solutions. In contrast, Leong and

Rasli's (2014) empirical study showed no differences in innovative work behavior and work role performance based on gender.

Educational level. Findings on the extent to which educational level influences an employee's decision to engage in innovative work behavior also are mixed. Some studies have suggested that more educated employees display more innovative behavior (Janssen, 2000; Tierney & Farmer, 2004). In contrast, Leong and Rasli (2014) found no differences attributable to education.

CHAPTER 3

METHOD

Purpose of Study

This correlational study examined the way in which public sector employees' perceptions of organizational justice and organizational support in their work environments, as well as selected descriptive factors (i.e., age, gender, and educational level), contributed to an understanding of innovative work behavior. The criterion variable, innovative work behavior, describes individuals' voluntary efforts to generate, promote, or apply new or adopted ideas within a work role, work unit, or organization to improve personal or organizational performance (Janssen, 2000; Scott & Bruce, 1994; Woodman et al., 1993). Predictor variables included organizational justice and, organizational support, and selected descriptive factors (i.e., age, gender, and educational level).

Research Questions

1. What is the relationship of public employees with respect to levels of organizational justice, organizational support, and innovative work behavior?
2. What is the best set of factors among organizational justice, organizational support, and selected descriptive variables of age, gender and level of education that explains public sector employees' innovative work behavior?

Research Design

The research employed a non-experimental, quantitative correlational design and data from an existing survey instrument, the Federal Employee Viewpoint Survey

(FEVS). A quantitative methodology was selected as the best approach to analyze the large dataset (Field, 2013) to provide a descriptive representation of the predicted relationship between the predictor variables, organizational justice and organization support, and the criterion variable, innovative work behavior. The strength and power of quantitative studies is based on the foundational premise that they permit an objective, focused examination of data from larger datasets, based on precise measurements obtained using structured and validated instruments. Researchers who use quantitative designs can describe, explain, and predict outcomes accurately with statistically significant and replicable correlations and comparisons. They also can generate results with findings that can be generalized to other populations (Johnson & Christensen, 2014).

A non-experimental design was selected to describe the relationships between the study variables without manipulation or assignment of causation, as would be the case with experimental, quasi-experimental, or casual-comparative designs. Experimental designs attempt to make causal inferences about the relationship between independent and one or more dependent variables, and are characterized by the direct manipulation of independent variables and thorough control of other irrelevant variables (Gelo, Braakmann, & Benetka, 2008). This study employed a secondary dataset, which precluded variable manipulation, and in turn, the employment of an experimental design.

Causal-comparative designs attempt to identify the reasons or causes for the phenomena examined (Borland, 2001). A causal-comparative design involves the use of pre-existing or derived groups to explore the differences between or among those that influence outcome or dependent variables (Johnson & Christensen, 2014). Because the study sample consisted of a single group of federal employees, the FEVS data were used to ensure that the results were representative of all federal agencies and the federal

workforce overall, which thereby enabled the findings to be generalized. While a comparative analysis would have been possible (e.g., comparing the results of different federal agencies or sub-groups included in the survey), the endeavor was beyond the scope and interest of the research.

A correlational design was determined to be the best approach to ascertain the degree of association between selected variables to develop and test hypotheses related to the research questions posed in this study. Such a design does not establish cause and effect relationship, but can determine their direction and strength (Field, 2013; Gall, Gall, & Borg, 2003). To address the first research objective, the relationship between organizational justice, organizational support, and innovative work behavior was examined using correlation analysis

Data were collected through an existing validated survey instrument. The FEVS is designed to measure employee perceptions of conditions that characterize successful organizations (Office of Personnel Management, 2015a, 2015b). The 2015 FEVS was a 98-item, web-based, self-administered survey. Survey items selected for this study were based on respondents' perceptions of innovative work behavior, organizational justice, and organizational support.

A reliability analysis was performed using Cronbach's alpha to ensure that each set of survey questions that represented the study variables was internally consistent and measured the same construct (Weaver & Wuensch, 2013). Garson (2012) indicated that a Cronbach's alpha of 0.60 or higher reflects consistency within the data. A general guideline in most social sciences is that a reliability coefficient of 0.70 or higher is "acceptable" in demonstrating internal consistency (George & Mallery, 2003; Kline, 1999).

Correlational analyses were employed to measure the direction and strength of the relationship between employees perceived organizational justice, organizational support, the selected descriptive variables (i.e., age, gender, and educational level), and innovative work behavior. A correlational research design was selected because it is appropriate when the relationships between two or more quantitative variables from the same set of participants is examined. This design was used to describe the relationship (or covariation) between the variables studied to determine how strongly they were related to each other (Ghauri & Gronhaug, 2002).

In addition, multiple correlation analysis was performed (Field, 2013; Garson, 2012) to test the statistical relationships between the criterion variable and the predictor variables to determine how and to what degree organizational justice and organizational support are related to positive innovative work behavior on the part of employees in public sector organizations. Correlation analysis was also performed to identify what set of factors among organizational justice, organizational support, and selected descriptive variables (age, gender, and educational level) best explains the innovative work behavior of public sector employees.

Archival Data

The study used data from the 2015 FEVS, conducted by the United States (U.S.) Office of Personnel Management (OPM), which are available to the public. Working with archival data has both advantages and disadvantages. The use of an existing dataset eliminated the need to design data collection protocols and resulted in significant savings of both time and money. Further, the data were available and accessible immediately. Other advantages included the use of larger samples that were more likely to be representative of the target population, which produces greater external validity (Ghauri

& Gronhaug, 2002). Datasets such as this one often contain considerable breadth, in that they collect information on a large number of variables, and reanalysis of the data often can lead to new insights and discoveries.

The primary disadvantage of using archival data is that secondary researchers have no control over what data were collected and how, because the population studied, data collected and their quality, and the definitions and measurement of variables are predetermined (Hulley, Cummings, Browner, Grady, & Newman, 2013). Because secondary data usually are not analyzed for the same purposes as in the original study, the goals and purposes of the original researcher can potentially bias subsequent analyses and must be acknowledged. Another limitation is that secondary researchers often are not the same as those involved in the data collection process. Researchers may be unaware of study-specific nuances or issues with the data collection process that may be important in the interpretation of specific variables. Thus, ensuring a match between research questions and existing data, careful examination of all relevant documentation, and a thorough understanding of the data are required (Johnston, 2014).

Participants

The federal government is the largest employer in the U.S., with over 2 million employees (Office of Personnel Management, 2015a). As such, it is a prime research laboratory for organizational studies (Damp, 2010). In 2015, the total population sampled for the FEVS included 1,837,060 full-time and part-time permanent and non-seasonal employees employed worldwide as of October 2014 in 37 large departments and 45 small, independent Federal agencies for a total of 82 federal agencies (Office of Personnel Management, 2015a, 2015b).

A total of 848,237 (46%) employees from the total population were invited to participate in the survey. The 82 federal agencies comprised 97% of the Executive branch workforce (Office of Personnel Management, 2015a, 2015b). The sampling frame was based on lists of employees from all agencies participating in the survey. A comprehensive list of all agencies and subagencies that participated in the 2015 FEVS can be found in Appendix A.

To identify the sample, the OPM used a stratified sampling approach to produce generalizable results for each individual agency, as well as for the entire federal government (Enticott, Boyne, & Walker, 2009). The stratified sampling was performed in five steps. First, individuals were stratified based on work unit or level identified by each of the federal agencies that participated in the survey. Second, any strata with fewer than 10 individuals were included in the next highest applicable stratum. If there was no higher applicable level, the stratum was left intact. This was done because a work unit of 10 or fewer was too small to receive a report. Third, individuals in senior leader positions were placed in a separate stratum as they constitute a rare subgroup of analytic interest. Fourth, using established stratification boundaries (Steps 1- 3) a sampling proportion was assigned based on the size of the stratum and the goal to obtain at least 10 respondents per stratum. A conservative response rate of 30% was assumed. The minimum sampling proportion was 25%; thus, each employee had at least a one in four chance of being selected to participate. The fifth and final step involved examining each agency's ratio of employees to be sampled. If 75% or more of the workforce was to be sampled, 100% of the employees was surveyed (Office of Personnel Management, 2015b). This stratified sampling procedure produced a sample of 848,237 in 2015.

Of the 1,837,060 federal employees in the population, 848,237 (46%) received the survey, and a total of 421,748 completed it, for a government-wide response rate of 49.7% (Office of Personnel Management, 2015a, 2015b). The sample size was more than sufficient to ensure a 95% confidence level that the true population would lay between plus or minus 1% of any estimated percentage for the total federal workforce (Office of Personnel Management, 2015a, 2015b). The study employed data from all responses received for each question in the 2015 survey.

Instrumentation

The FEVS measures federal employees' attitudes and perceptions across a variety of dimensions known to be associated with a satisfied, engaged, and productive workforce. The OPM has conducted the FEVS, formerly the Federal Human Capital Survey (FHCS), since 2002. The survey was conducted biennially from 2002 to 2010, and annually since 2011, and provides federal government employees with an opportunity to share their perceptions of their work experiences, agencies, and leaders. Organizations within the federal government use the survey results to help improve various areas, such as employee satisfaction and engagement, as well as to share their successes. The survey results also help agency personnel identify areas that need intervention to promote positive workplace behaviors, retain valuable and talented employees, and complete their missions successfully. The survey was administrated from April-June 2015. Agency launch dates were staggered throughout this timeframe, and each agency was offered a six-week administration period, but could opt for a shorter period (Office of Personnel Management, 2015b).

The FEVS survey instrument is comprised of 84 items (see Appendix B) that address seven work areas—personal work experiences, work unit, agency, supervisor,

leadership, satisfaction, and work/life—and 14 demographic questions. Researchers have used FEVS data to produce numerous peer-reviewed publications on a range of topics of interest to policymakers, practitioners, and academics (Fernandez, Resh, Moldogaziev, & Oberfield, 2015).

In creating the publicly available data set, OPM masked all individually identifiable information to minimize the possibility of identifying individual respondents. The strategy used to ensure confidentiality overall comprised four steps: (1) masking all agencies and sub agencies with fewer than 20 respondents; (2) removing identifiers, such as respondent's name, employee number, email address, and telephone number from the survey data; (3) collapsing response groups, and (4) suppressing key demographic characteristics to prevent identification of individuals (Office of Personnel Management, 2015b). For example, although the 2015 FEVS questionnaire contained 14 demographic questions, the public release dataset provided results for only 10 items to prevent identification of individuals. Response groups for two of the descriptive variables used in the current study, age and educational level, were collapsed into four age groups rather than six cited in the survey, and three educational level groups rather than the four groups cited in the survey.

The FEVS was designed to produce valid results that are representative of federal employees and agencies. The survey was constructed to provide results by supervisory status (non-supervisor, supervisor, executive), gender, minority status, years employed by the federal government, and retirement eligibility. Statisticians at the OPM employed available information about the entire survey population to develop weights for respondents. The weighting process involved computing and assigning a weight to each FEVS respondent. The weight indicated the number of employees in the survey

population the respondent represents. Information about demographic characteristics, such as gender, race, supervisory status, age, and agency size, were used to develop the weights (Office of Personnel Management, 2015b). The weights were applied for data analyses, so that the survey findings could be generalized to the entire population. If weights were not utilized, estimates for the agencies and subgroups covered by the survey would have been biased because some population subgroups were under or over represented in the respondent group. The FEVS weights adjusted for the differences between the survey population and respondent group (Office of Personnel Management, 2015b). Data weighting also supported the study of the relationships between the independent, dependent, and descriptive variables without regards to confounding, conditioning, or intervening effects caused by under or overrepresentation.

The 2015 FEVS data were weighted in four steps:

1. A base weight was computed for each employee in the sample. The base weight is equal to the reciprocal of the employee's probability of selection.
2. The base weights of respondents with usable surveys were increased to compensate for sample employees who did not complete or return their surveys. Demographic variables and special software that detects relationships among variables were used during the nonresponse adjustment process.
3. The nonresponse-adjusted weights were then modified through a process called raking, the purpose of which is to use information known about the survey population (such as demographic characteristics) to increase the precision of population estimates. For the 2015 FEVS, statisticians used demographic information about federal employees to form dimension

variables. Then they raked the data until sample distributions for the dimension variables equaled population distributions within a specified degree of precision.

4. Respondents' final adjusted weights indicate the number of employees in the survey population they represented.

Item Construction

To measure each of the variables, survey items for the analysis were selected from the 2015 FEVS survey. Innovative work behavior was the criterion variable, and organizational justice, organizational support, and the descriptive factors were measured as predictor variables.

Innovative Work Behavior

Consistent with the literature, innovative work behavior was measured as a unidimensional construct that focuses on innovative behavior *overall* rather than delineating its different stages (idea generation, promotion, and implementation: Carmeli & Spreitzer, 2009; Janssen, 2004; Scott & Bruce, 1994).

Based on this, the variable was measured using the five survey items shown in Table 1. A 5-point Likert scale (Strongly agree, Agree, Neither agree or nor disagree, Disagree, and Strongly disagree) was used, and responses were summed to represent participants' overall perceptions. Total scores ranged from 5 to 25, with higher scores indicating a higher level of innovative work behavior.

Table 1

2015 FEVS Items Used to Measure Innovative Work Behavior

Item No.	FEVS Question
3.	I feel encouraged to come up with new and better ways of doing things.
8.	I am constantly looking for ways to do my job better.
30.	Employees have a feeling of personal empowerment with respect to work processes.
31.	Employees are recognized for providing high quality products and services.
32.	Creativity and innovation are rewarded.

Organizational Justice

Organizational justice often is measured in the literature as individuals' perceptions of fairness in their workplace outcomes (distributive), the organization's formal policies and procedures (procedural), and relationships with colleagues and supervisors or treatment received at work (interactional: Aryee et al., 2002; Luo, 2007). Justice or fairness refers to the idea that an action or decision is morally right according to ethics, religion, equity, or law. Individuals react to actions and decisions made by organizations daily.

An individual's perceptions that organizational outcomes and decisions are fair or unfair can influence his/her subsequent attitudes and behaviors in the workplace (Erdogan et al., 2006). Theorists have suggested that when an organization is deemed fair, individuals will be more likely to engage in activities that benefit it (Greenberg & Colquitt, 2006). This study investigated the relationship between organizational justice and innovative work behavior and hypothesized that public sector employees who believe they are treated fairly (e.g., with dignity and respect, equal enforcement of policies, justifications or explanations from colleagues and supervisors: Bies, 2005; Luo, 2007) are more likely to engage in innovative work behavior.

Consistent with past studies (Aryee et al., 2002; Cho & Sai, 2013; Sabharwal, 2015), organizational justice was measured by the eight survey items shown in Table 2 using the same 5-point Likert scale (Strongly agree, Agree, Neither agree or nor disagree, Disagree, and Strongly disagree). Responses were summed to represent participants' perceptions of organizational justice. Scores ranged from 8 to 40, with higher scores indicating higher levels of organizational justice.

Table 2

2015 FEVS Items Used to Measure Organizational Justice

Item No.	FEVS Question
10.	My workload is reasonable.
15.	My performance appraisal is a fair reflection of my performance.
17.	I can disclose a suspected violation of any law, rule or regulation without fear of reprisal.
22.	Promotions in my unit are based on merit.
24.	In my work unit, differences in performance are recognized in a meaningful way.
33.	Pay raises depend on how well employees perform their jobs.
56.	Managers communicate the goals and priorities of the organization.
65.	How satisfied are you with the recognition you receive for doing a good job.

Organizational Support

Organizational support reflects an employee's global assessment of all organizational members who control resources and rewards (Eisenberger et al., 1986; Hochwater, Witt, Treadway, & Ferris, 2006). Perceived organizational support "may be used by employees as an indicator of the organization's benevolent or malevolent intent in the expression of exchange of employee effort for reward and recognition" (Lynch, Eisenberger, & Armeili, 1999, pp. 469-470). Organizations that provide high levels of aid to workers do so by focusing on resources that they need: socioemotional support, equipment, funding, technology, ideas, and physical assistance (Eisenberger et al., 1986).

Without these resources, it is difficult to achieve high levels of quality performance. Accordingly, this study examined organizational supports' direct role in stimulating public sector employees to be more innovative. This study hypothesized that employees who believed that their organization values their individual contributions and cares about their well-being are more likely to engage in innovative work behavior (Lynch et al., 1999).

Consistent with past studies (Eisenberger et al., 1986; Edwards & Peccei, 2010; Rhoades & Eisenberger, 2002), organizational support was measured using the seven survey items shown in Table 3 and the same 5-point Likert scale (Strongly agree, Agree, Neither agree or nor disagree, Disagree, and Strongly disagree). Responses were summed to represent participants' perceptions of organizational support. Scores ranged from 7 to 35, with higher scores representing higher levels of organizational support.

Table 3

2015 FEVS Items Used to Measure Organizational Support

Item No.	FEVS Question
1.	I am given a real opportunity to improve my skills in my organization.
11.	My talents are used well in the workplace.
42.	My supervisor supports my need to balance work and other life issues.
46.	My supervisor provides me with constructive suggestions to improve my job performance.
48.	My supervisor listens to what I have to say.
49.	My supervisor treats me with respect.
50.	In the last six months, my supervisor has talked with me about my performance.

Descriptive Factors

The OPM included 14 descriptive survey items in the 2015 FEVS. A few of the descriptive items in the archival dataset (e.g., supervisory status, minority status) were truncated from specific delineations to more general categorical variables (e.g., minority,

non-minority). The OPM (Office of Personnel Management, 2015b) collapsed the response categories to preserve respondents' confidentiality. Of the descriptive items available in the public dataset (see Appendix C), age, gender, and education level were deemed to be of the greatest research interest, as they allowed an exploration of the potential predictive effect of selected socio-descriptive variables on an individual's decision to engage in innovative work behavior, and an examination of the possible interaction effects of the variables selected with employee innovative work behavior in the public sector. Thus, the ways in which they relate to innovative work behavior were examined to provide additional insight about the influences on employees' decisions to act innovatively.

Age was examined because the literature has shown mixed results on its effect on innovative work behavior. Some previous research studies have suggested that older workers are often perceived by others as less creative, more rigid, more difficult to train, and more resistant to change (Bergh, 2001; Simsek, 2007). Other researchers have argued that older workers develop greater knowledge through more years of work experience and thus, might be more capable of innovation than their younger colleagues (Ng & Feldman, 2013). Age was measured in four categories (1=under 40; 2=40-49; 3=50-59, and 4=60 or older).

Gender differences (1=men, 2=women) may account for variation in the opportunities employees have to be involved in innovative work. The results of research on the way in which gender differences may influence innovative work behavior also are mixed. Gender differences may account for variation in the opportunities employees must be involved in challenging activities that lend themselves more to creative problem solving and innovative solutions (Carmeli & Schaubroeck, 2007). In contrast, Leong and

Rasli (2014) showed a lack of difference in innovative work behavior and work role performance based on gender.

Research on the extent to which education level influences an employee's innovative work behavior is mixed. Some studies have suggested that people with lower educational attainment may have less positive attitudes toward their work (Gilson & Shalley, 2004; Unsworth, 2001). Similarly, other scholars have argued that employees with more education display more innovative behavior (Gilson & Shalley, 2004; Janssen, 2000). However, Leong and Rasli (2014) found a lack of difference in the innovative work behavior and work role performance based on education. Education levels were measured using three categories (1=less than a Bachelor's degree; 2=Bachelor's degree, and 3=post-Bachelor's degree).

Validity

Validity is the process of collecting evidence to support the inferences that can be drawn from test scores. It is the judgment of how well a test or other instrument measures what it purports to (Cohen & Swerdlik, 2002). Messick (1980, p. 1014) noted that instrument validity is an overall "justification for test interpretation and use" of an instrument. While both reliability and validity are important, validity is the more important of the two because if the measurement is not valid, reliability is meaningless (Gloeckner, Gliner, Tochtermann, & Morgan, 2001). There are three traditional forms of validity to look for when developing a robust research design; *content*, which establishes whether the items measure the content they were intended to (Garson, 2012), *predictive* or *concurrent*, in which scores predict a criterion measure or correlate with other results (Nunnally & Bernstein, 1994), and *construct*, which establishes whether survey items measure hypothetical constructs or concepts (Crocker & Algina, 2008; Huck, 2008).

Content validity was the most important in this study. Content validity answers the question, “Do the various items that make up an instrument cover the material that it is supposed to?” (Crocker & Algina, 2008; Huck, 2008). The type of validity an instrument needs varies according to its form. “Validity takes different forms because there are different ways in which scores can be accurate” (Huck, 2008, p. 89), and establishing instrument validity helps researchers identify an instrument’s adequacy (McCoach, 2002).

In this study, data were obtained from a secondary data source. The FEVS was validated by OPM human resource specialists and psychologists before it was administered to survey respondents. The FEVS also has been validated by other researchers and has become a standard dataset in the government and research communities (Weaver & Wuensch, 2013). The variables in this study were captured by specific FEVS questions pertaining to perceptions of organizational justice, organizational support, and innovative work behavior. According to Garson (2012), construct validity is portrayed best by measuring consistency through statistical techniques such as Cronbach’s alpha and factor analysis. Garson (2012) advocated a Cronbach’s alpha score of .60 or higher for exploratory research, as it suggests consistency within the data. A broad rule of thumb is that a reliability coefficient of .70 or higher is considered “acceptable” in most social science situations for describing internal consistency (George & Mallery, 2003; Kline, 1999).

Reliability

Reliability has been defined as “the consistency or repeatability of a measure” (Thomas & Nelson, 1996, p. 220). A reliable instrument measures the content and constructs put forth by test developers consistently. An instrument’s reliability often is

the first step in determining a measure's validity. The degree of reliability is expressed in three domains: (1) stability; (2) alternative forms, and (3) internal consistency (Cohen & Swerdlik, 2002; Thomas & Nelson, 1996).

Procedure

The 2015 FEVS was administered to the respondents electronically via an online, web-based survey. An email asked employees to participate, and included a link to the website containing the survey. Follow up emails were sent to respondents to encourage a higher response rate. Survey results were collected, administered, and published electronically.

The completed dataset was retrieved and downloaded as a public-use file extracted from the OPM website. A 2015 Public Use Data File Request Form was sent to the OPM website administrator, detailing the intended use: a doctoral dissertation study on the influences of organizational justice and organizational support on innovative work behavior in public sector employees. Informed consent was not required, as the survey was available publicly, and no personal identity data were included. Because of these characteristics of the data, the University of Georgia (UGA) Institutional Review Board (IRB) determined that this study did not include research involving human subjects as defined by Department of Health and Human Subjects (HHS) and the Federal Drug Administration (FDA) regulations. Thus, UGA IRB review and approval were not required (see Appendix D). Further, because the researcher was a HHS employee with the Centers for Disease Control and Prevention (CDC), confirmation that HHS/CDC IRB review and approval was not required was obtained as well (see Appendix E). Study data were stored electronically on the researcher's computer in a password-protected directory location. The data will be retained for two years following completion of the study, at

which time they will be deleted from the secure file directory location. The raw data will continue to be available to the public on the OPM website for an indefinite period.

Data Analyses

The IBM Statistical Package for the Social Sciences (SPSS) version 24 (Field, 2013) was employed to assess the relationships between the study variables, organizational justice, organizational support, and innovative work behavior. The raw data were retrieved, screened for accuracy and legibility, and reviewed to ensure there were no missing entries or reversal items that might have required data transformation before they were imported into the SPSS application for analysis.

Descriptive statistics were performed to characterize the data tabulated from the online survey results. Descriptive statistics typically are used to define and provide a simple summary of data taken from a sample population. The statistics used to describe or summarize a dataset can include frequency distributions of central tendencies, graphs such as line plots, histograms, and scatter plots, or numerical indices, such as correlations, and measures of variability and central tendency.

Correlation coefficients were calculated using Pearson's residuals to determine the data fit and portray the strength of the linear relationship between the three variables accurately (Kiemele, Schmidt, & Berdine, 2000). In addition, multiple correlation analysis was performed using SPSS to describe the statistical relationship between the criterion variable, innovative work behavior, and the predictor variables of organizational justice and organizational support.

Traditionally, researchers have used either the 0.05 or 0.01 probability levels, although the choice of levels largely is subjective (Best, 2003). With large samples, such as that used in this study, conclusions based on a 95 percent confidence level can be

ineffective at best, and produce misleading results at worst. In large samples, p -values can drop to zero quickly and lead researchers to claim support for results of no practical importance (Chatfield, 1995). The increased power of large samples allows researchers to detect smaller, subtler, and more complex effects. According to Chatfield (1995, p. 70), “The question is not whether differences are significant (they nearly always are in large samples), but whether they are interesting. Forget statistical significance, what is the practical significance of the results?”

For this study, the alpha used to identify and report statistically significant differences was set at 0.01. Given the large sample used in the analysis, a more conservative approach was warranted to reduce the probability of producing false significance results. SPSS was used to conduct reliability tests, as well as the factor and multiple correlation analyses to study the relationship between the predictor and criterion variables.

Likert scale data generally are considered to be ordinal measurements because the intervals between values cannot be presumed equal. Thus, Jamieson (2004) concluded that the median should be used as the measure of central tendency for such data. However, Blaikie (2003) found that it has become common practice for Likert-type categories to be viewed as an interval-level measurement. Norman (2010) provided compelling evidence that parametric tests not only can be used with ordinal data, such as those from Likert scales, but also that parametric tests generally are more robust than are non-parametric tests. He also found that parametric tests tend to provide accurate results even when statistical assumptions—such as the normal distribution of data—are violated. Accordingly, the Likert scale data used here were analyzed as interval measurements. As Boone and Boone (2012) explained, Likert scale items are created by calculating a

composite score (sum or mean) from four or more Likert-type items; therefore, the composite score for Likert scales should be analyzed on an interval measurement scale.

Various statistical analyses were conducted, including calculations of means (central tendency), standard deviations (variability), Pearson's r for associations, and correlation analysis. The dataset was screened to eliminate cases with missing variables using listwise deletion, also referred to as complete-case analysis, which removes all data for a case that has one or more missing values. King, Honaker, Joseph, and Scheve (2001) posited that listwise deletion can result in massive data loss and subsequently increase the probability of Type II errors. Responses to FEVS survey items are not mandatory, and thus, some degree of item non-response is expected. Reports of FEVS non-response rates are minor, typically less than 5% (Lewis, 2012), and with a sample of 421,728, an estimated 5% of non-response cases (21,087) still leaves a sample size of 400,641.

Multiple variables (i.e., organizational justice, organizational support, and selected descriptive factors of age, gender, and level of education) were used to determine which combination of these variables provided the best explanation (prediction) of innovative work behavior in public sector employees. Study variables were measured using survey questions that required attitudinal responses using a 5-point Likert scale (Strongly agree, Agree, Neither agree or nor disagree, Disagree, and Strongly disagree). For this study, predictor and criterion variables were treated as interval, continuous variables.

Several Likert-type items were grouped together and total scores were calculated for the scale items. This approach is suggested when a single survey item is unlikely to be able to capture the concept being assessed fully (Rickards, Magee, & Artino, 2012).

In these instances, Cronbach's alpha was used to provide evidence that the components of the scale were intercorrelated sufficiently and that the grouped items measured the underlying variable (Rickards et al., 2012).

Descriptive Statistics

Descriptive statistics identify the characteristics of a sample and were used to answer the research questions posed in this study. Creswell (2002) stated that "descriptive statistics help describe responses to questions, determine overall trends, and the distribution of data" (pp. 230-231). Wallen and Fraenkel (2001) defined descriptive statistics further as "data analysis techniques enabling the researchers to meaningfully describe data with numerical indices or in graphic form" (p. 475). This statistical method does not allow conclusions to be applied beyond the data analyzed or reached with respect to any study hypotheses, and were generated simply to summarize the data. Frequency tables for respondents' age, gender, educational level, as well as for each predictor and criterion variable, were generated using SPSS.

Correlation Analysis

Correlation analysis was used to answer the research questions posed in this study, using an ex-post facto design because archival data were used. Correlation allowed examination of the relationship between the two predictor variables and single criterion variable (Huberty & Hussein, 2001), and the results identified the variables, or set of variables, that predicted innovative work behavior among public sector employees best.

Correlation analysis estimates multiple relationship among variables and is commonly used when one focuses on relationships between a criterion variable and predictor variables. Correlation helps explain the way in which the value of the criterion

variable changes when the composition of the predictor variables varies, while other predictor variables are held constant. Multiple correlation analysis was used to compute the correlation between an entire set of predictors and a single criterion variable. It also was used to isolate the relative contribution of each predictor to the size of the criterion variable (Lewis, 2001).

Correlation analysis has several advantages. First, it is one of the statistical techniques used most commonly and thus, many people are familiar with it (Field, 2013). Second, correlation is a very flexible method, in that the predictors can be numeric or categorical, interactions between variables can be incorporated, and polynomial terms also can be included (Cramer & Howitt, 2004). Third, it uses multiple predictor variables in which each control for the others (Creswell, 2012). Fourth, it allows researchers to determine the fit of the correlation model overall (variance explained), and each of the predictors' relative contribution to it (Everitt, 2002).

The major conceptual limitation of all correlation techniques is that one can only ascertain relationships, not determine underlying causal mechanisms (Creswell, 2012). Additional limitations of correlation models include: (1) techniques often are complex and may require a statistical program to analyze the data (Field, 2013), and (2) results are not always simple to interpret (Gay, Mills, & Airasian, 2012); to provide meaningful results, a large sample of data is needed, as otherwise, the results often are meaningless because of high standard errors (Johnson & Christensen, 2014).

Multiple Correlation

Correlation analysis includes “a set of statistical procedures used to explain or predict the values of a dependent variable based on the values of one or more independent variables” (Johnson & Christensen, 2014, p. 540). Correlation provides a

way to determine the best straight line (correlation line) that reflects the coordination of all data points and approximates the relationship between variables (Menard, 2002; Portney & Watkins, 2009), or the way in which a dependent (response or criterion) variable changes as independent (explanatory or predictor) variables change (Moore, 2007). Correlation accomplishes one of two things: it predicts a variable's value based on the values of other variables, or explains why values differ depending on a variable (Field, 2013; Huck, 2008).

The correlation (regression) equation defines the correlation line, or line of best fit, by making the vertical distances between all data points and the line as small as possible. The correlation line is calculated using the method of least squares in which, of all possible lines, the squared sum of all residuals (error represented by the distance between data points and the line) is the smallest (Field, 2013; Portney & Watkins, 2009). Two important characteristics of any line are its slope (steepness) and intercept (where the line crosses the y-axis); these also are an important part of the correlation equation (Johnson & Christensen, 2014).

In its simplest form, the correlation equation is stated as $y = a + bx$, where y is the predicted value, a is the intercept or the value of y when $x = 0$, b is the slope/correlation coefficient, or the amount by which y changes when x increases by one unit, and x is the known value of the single independent variable (Field, 2013; Huck, 2008; Johnson & Christenson, 2014; Portney & Watkins, 2009). Finding the least squares correlation line and its corresponding equation makes it easy to predict y from x (Moore, 2007). By using the correlation equation and its corresponding correlation coefficient (b), values for x variable data points can be entered to predict the value of the dependent variable. Thus, participants' scores for each predictor variable are multiplied by their respective

correlation coefficients, then summed, and added to the constant value to provide the best possible prediction score of the criterion variable (Field, 2013; Johnson & Christenson, 2014).

The correlation (regression) coefficient (r) measures the magnitude of the relation between a criterion and predictor variable. Three elements are essential for correlation analysis. They include the R , R^2 , and ΔR^2 (Field, 2013; Huck, 2008). The correlation coefficient is represented by R , and the relation is based on some combination of the multiple predictor variables. The R value will increase with each variable that enters the analysis and the larger the R , the better the prediction of the criterion variable (Johnson & Christenson, 2014). R also indicates how well the correlation equation fits or the degree to which the predicted and actual scores correspond (Field, 2013; Huck, 2008). Using the simple Pearson correlation, the multiple correlation (R) is assessed numerically by the correlation between the y and x values to determine the fit of the equation (Huberty & Hussein, 2001). The process of calculating R^2 , or the coefficient of determination, is used to measure the goodness of fit or relative closeness of the correlation line (Field, 2013). By squaring the correlation coefficient (R) to arrive at the coefficient of determination (R^2) the percentage of total variance in the dependent variable explained by the independent variable, or combination of independent variables, is defined (Field, 2013; Johnson & Christensen, 2014).

Correlation analysis was chosen because no causal relation can be defined between organizational justice, organizational support, and innovative work behavior because of numerous extraneous variables and the inability to design an experiment that would determine cause and effect. Variables were not compared to one another for statistical significance, but instead, the relationships were

assessed to establish the correlation with and without the other variables considered.

Analyzing multiple variables can predict the probability of the best possible combination or effect between any of the criterion and predictor variables. The correlation provides a measure of how well the set of independent variables predicts each dependent variable (Huberty & Hussein, 2001). The probability calculated in logistic correlation shows the odds that a case will be classified in one category rather than another (Menard, 2002). This analysis provided the best measurement of the effect of organizational justice and organizational support on the innovative work behavior of public sector employees.

Advantages of using a correlation analysis here included the ability to consider many factors in non-experimental data simultaneously to build a model and determine which (or which combination) was the best set of predictors of innovative work behavior (Huberty & Hussein, 2001). Because of its versatility, correlation also can be used to analyze data from many quantitative designs and manage multiple types of data (Gall et al., 2003).

Multiple correlation is an extension of simple linear correlation and is used when the criterion variable is continuous. Thus, linear correlation was used because the study included continuous variables. Multiple correlation also was used to create models of the variables that predicted of innovative work behavior in public sector employees best. When conducting multiple correlation analysis, researchers must be aware of the potential for multicollinearity. Multicollinearity is a phenomenon in which one predictor variable in a multiple correlation model can be linearly predicted from the others with a substantial degree of accuracy (Cramer & Howitt, 2004). A variance inflation factor (VIF) factor was used to identify any correlation effects. VIF value quantify the severity of multicollinearity in an ordinary least squares correlation

analysis (Cramer & Howitt, 2004). It provides an index that measures how much the variance (the square of the estimate's standard deviation) of an estimated correlation coefficient is increased because of collinearity (Everitt, 2002).

CHAPTER 4

RESULTS

The objective of this correlational study was to assess how public sector employees' perceptions of organizational justice and organizational support influence an employee's decision to engage in innovative work behavior and ways that selected descriptive factors (age, gender, and educational level) relate to innovative work behavior. The study sought to expand knowledge of innovative work behavior in the context of the public sector. The three study variables, innovative work behavior, organizational justice, and organizational support were operationalized using definitions and similar studies found in the literature. Secondary analysis was conducted with a publicly available data set from the United States Office of Personnel Management (OPM), which conducts annual surveys of federal employees.

The 2015 Federal Employee Viewpoint Survey (FEVS) survey is a 98-item, web-based, self-administered survey. The survey instrument is comprised of 84 items that address seven work areas—personal work experiences, work unit, agency, supervisor, leadership, satisfaction, and work/life—and 14 demographic questions. The survey was administered to the respondents using an online, web-based survey format. Respondents were asked to participate via an email that included a link to the web site containing the survey. Follow-up emails were sent to sample members to encourage a higher response rate. Survey results were collected and managed electronically by the OPM. Final survey results were released as a publicly available data file on the OPM web site.

A quantitative methodology was selected to analyze the FEVS data set to provide a descriptive and inferential representation of the relationships between the predictor variables - organizational justice and organizational support - and the criterion variable, innovative work behavior. The study also examined the relationship between selected descriptive factors and innovative work behavior. Specific descriptive factors studied include age, gender, and educational level.

This chapter presents results of the descriptive and statistical analyses pertinent to the research questions this study posed. The operationalized concepts of organizational justice, organizational support, and innovative work behavior are discussed. Analysis of the primary research question examined the relationship between organizational justice, organizational support, and innovative work behavior. The second research question identified the best set of factors among organizational justice, organizational support, and selected descriptive factors (i.e., age, gender, and educational level) to explain the innovative work behavior of public sector employees.

Information on the descriptive factors used in the study is presented in Table 4. Men comprised 51% of the survey respondents, while 49% were women. Participants' ages ranged from under 40 (21.6%) to 60 and over (15.5%). A total of 78% of respondents were 40 years old or over. Participants' educational level was described as: education prior to a bachelor's degree (i.e., high school or equivalent, some college, or Associates degree (39.2%), bachelor's degree (30.7%), and post-bachelor's degree (30.2%).

Table 4

Descriptive Variables of Federal Employees Viewpoint Survey (FEVS) Respondents

Descriptive Variables	<i>n</i>	Percent
Gender	421,748	
Men	217,139	51.49
Women	204,609	48.51
Age	419,967	
Under 40	90,617	21.58
40-49	111,172	26.47
50-59	152,977	36.42
60 or older	65,201	15.53
Education level completed	417,378	
Education prior to bachelor's degree	163,531	39.18
Bachelor's degree	127,928	30.65
Post-bachelor's degree	125,919	30.17

Source. 2015 FEVS. *n* = number of respondents

One issue to consider when analyzing large datasets, like the FEVS, is missing values. Missing data can be a source of measurement error and are endemic throughout the social sciences (Juster & Smith, 1998). Item non-response on surveys can occur for several reasons, including fatigue, sensitivity, or lack of knowledge (Acock, 2005). According to Garson (2012), proper handling of missing values is critical to ensure that data analysis is not distorted or biased. Most statistical packages, including SPSS, drop missing cases listwise. Listwise deletion removes all data for a case that has one or more missing values. When the number of missing values is small, it is common practice among researchers to drop the cases from analysis rather than imputing values, as imputation can distort significance and effect size coefficients (Garson, 2012). In general, missing values for a variable is minimal if the percent of missing values is < 7%, unless the sample size is small (Acock, 2005). Missing values for each of the variables

included in the study range from 1.1% to 9.2% for organizational justice, 0.2% to 4.6% for organizational support, and 0.5% to 6.2% for innovative work behavior. Given the large FEVS sample, a listwise deletion solution is a reasonable strategy (Acock, 2005), and was used here to prevent distortion and the potential for bias in the data analysis. The percent of missing values in each variable making up the organizational justice, organizational support, and innovative work behavior constructs are provided in Appendix F.

Reliability Analyses

Scales that represented the three study variables were created by reviewing and selecting FEVS questions that measure one of the variables (see Table 5). Each scale was calculated by summing responses to questions for each and dividing by the total number of questions to create an original scale in SPSS. A reliability analysis was performed for each scale using Cronbach's alpha to ensure data reliability that each set of survey questions representing the primary study variables was internally consistent (Wuensch, 2012). George and Mallery (2003) stipulated the following rules of thumb regarding the Cronbach's alpha coefficient: " $\alpha > 0.90$ —Excellent, $\alpha > 0.80$ —Good, $\alpha > 0.70$ —Acceptable, $\alpha > 0.60$ —Questionable, $\alpha > 0.50$ —Poor, and $\alpha < 0.50$ —Unacceptable" (p. 231). Reliability rates for the current study were established using Cronbach's alpha measurements at $0.60 \leq \alpha < 0.70$ to be considered minimally acceptable.

Table 5

Study Variables and Survey Questions

Study variables	Survey questions	# of items (<i>n</i>)	Cronbach's alpha
Organizational justice	Q10, Q15, Q17, Q22, Q24, Q33, Q56, Q65	8	0.881
Organizational support	Q1, Q11, Q42, Q46, Q48, Q49, Q50	7	0.902
Innovative work behavior	Q3, Q8, Q30, Q31, Q32	5	0.858

Organizational Justice

Consistent with the past studies (Aryee et al., 2002; Cho & Sai, 2013; Sabharwal, 2015), the organizational justice variable scale was created using eight FEVS questions that pertained to employees' perceptions of fairness in their workplace, organization's formal policies and procedures, and relationships with colleagues and supervisor (Aryee et al., 2002; Lou, 2007) using a 5-point Likert scale (Strongly agree, Agree, Neither agree or nor disagree, Disagree, and Strongly disagree) for responses. Responses were summed to represent participants' perceptions of organizational justice. Scores ranged from 8 to 40, with higher scores indicating higher levels of organizational justice.

Pyzdek and Keller (2010) argued that the distribution of mean values drawn from a population tends to become distributed normally as the sample size increases. A normal distribution was confirmed for the organizational justice scale. Skew and kurtosis coefficients were analyzed to determine whether the data exhibited substantial non-normality. Skewness is the symmetry of a distribution. Positive values indicate that the distribution is skewed to the right, while negative values indicate that it is skewed to the left. Skewness for a normal distribution is ($S = 0$). Kurtosis measures the distribution's

shape. Positive values indicate that the distribution has longer tails than does normal distribution, while negative values indicate that the distribution has shorter tails. Kurtosis for a normal distribution is ($K = 0$).

Kim (2013) recommended that for sample sizes in which $N > 300$, the absolute values for skewness and kurtosis should be used without considering the z -values. He advised using an absolute skew value larger than 2, or an absolute kurtosis (proper) larger than 7, as reference values for the occurrence of non-normality. He noted as well that most statistical packages, such as SPSS, provide an *excess* kurtosis value obtained by subtracting 3 from the kurtosis (proper). To test whether the distribution for the organizational justice variable scale was normal, skew and kurtosis coefficients were analyzed to determine if substantial non-normality existed in the data. Referring to Table 6, the data for the organizational justice scale showed that $S = -0.22$, and its kurtosis was $K = -0.49$.

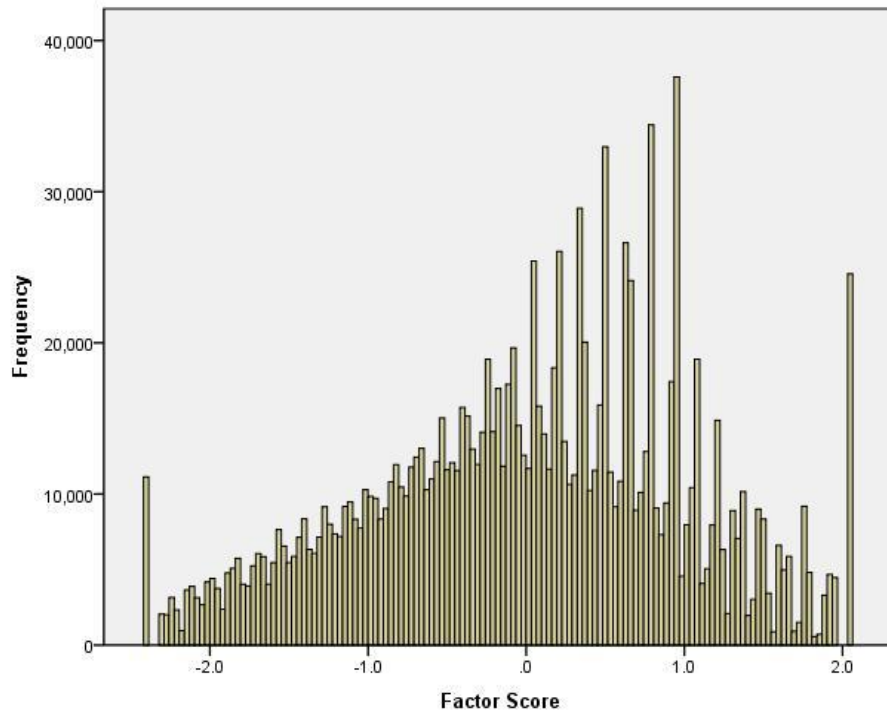
The histogram (see Figure 1) shows that respondents tended to have higher ratings on the component variables. It also reflects many respondents with very high ratings and very low ratings. Given the large sample size, $N > 400,000$, the data can be assumed to be normally distributed.

Table 6

Organizational Justice Variable Scale Statistics

Scale Statistics		Population	Sample
<i>N</i>	Total	1,755,515	421,748
	Valid	1,348,176	324,252
	Missing	407,339	97,496
Mean		0.00	
SD		1.00	
SE		0.00	
Skewness		-0.22	
Standard error of skewness		0.00	
Kurtosis		-0.49	
SE of kurtosis		0.01	

Note. Mean values reflect listwise deletion of scale component variables.



Histogram based on weighted analysis.

Figure 1. Histogram of the Organizational Justice Variable Scale

Cronbach's alpha testing was used to determine data reliability. Reliability in statistics and psychometrics is the overall consistency of a measure (Field, 2013). A measure is said to have a high reliability if it produces similar results under consistent conditions. The Cronbach's alpha score for the organizational justice variable scale ($n = 8$) was $\alpha = 0.88$, indicating good reliability overall. These data provided supporting evidence that the organizational justice variable scale yields consistent results and is therefore reliable.

Organizational Support

Consistent with past studies (Eisenberger et al., 1986; Edwards & Peccei, 2010; Rhoades & Eisenberger, 2002), the organizational support variable scale was created using seven FEVS questions pertaining to employees' beliefs that their employer values their contributions, appreciates their efforts, and cares about their well-being (Edwards & Peccei, 2010; Rhoades & Eisenberger, 2002) and the same 5-point Likert scale (Strongly agree, Agree, Neither agree or nor disagree, Disagree, and Strongly disagree). Responses were summed to represent participants' perceptions of organizational support. Scores ranged from 7 to 35, with higher scores representing higher levels of organizational support. To test whether the distribution for the organizational support variable scale was normal, the skew and kurtosis coefficients were analyzed to determine if there was substantial non-normality in the data. Referring to Table 7, data for the organizational support scale showed that $S = -0.85$, and $K = 0.36$.

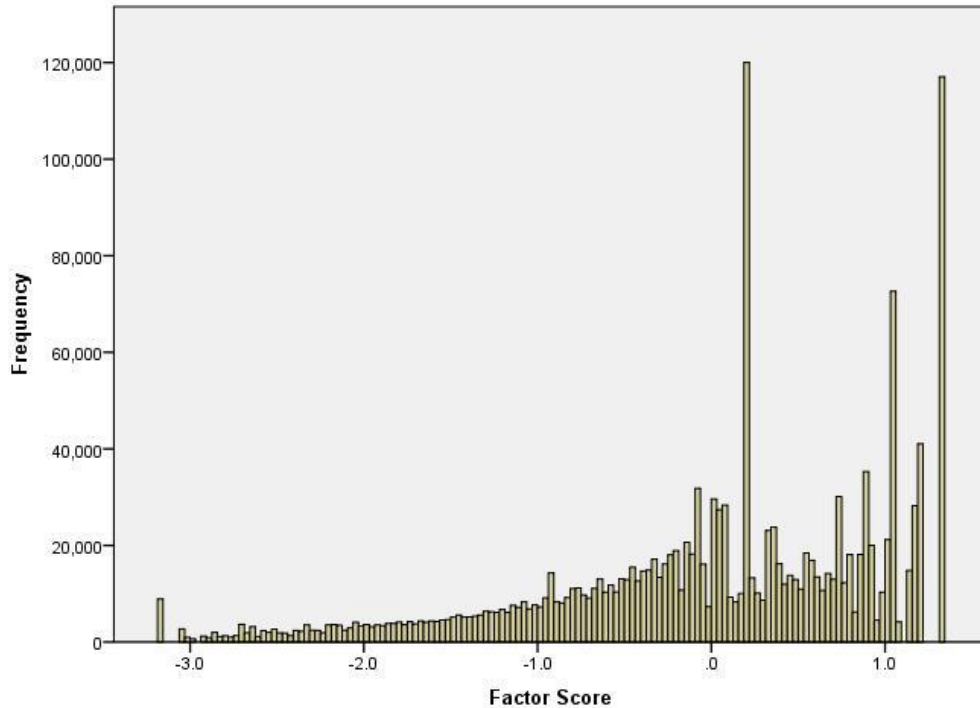
The histogram (see Figure 2) shows that respondents tended to have higher ratings on the component variables. It also reflects many respondents with very high ratings and not as many with lower ratings. Given the large sample size, $N > 400,000$, the data can be assumed to be normally distributed.

Table 7

Organizational Support Variable Scale Statistics

Scale Statistics		Population	Sample
<i>N</i>	Total	1,755,515	421,748
	Valid	1,591,892	386,716
	Missing	163,623	35,032
Mean		0.00	
SD		1.00	
SE		0.00	
Skewness		-0.85	
SE of skewness		0.00	
Kurtosis		0.36	
SE of kurtosis		0.01	

Note. Mean values reflect listwise deletion of scale component variables.



Histogram based on weighted analysis

Figure 2. Histogram of the Organizational Support Variable Scale

Cronbach's alpha testing was used to determine data reliability. Reliability in statistics and psychometrics is the overall consistency of a measure (Field, 2013). A measure is said to have a high reliability if it produces similar results under consistent conditions. The Cronbach's alpha score for the organizational support variable scale ($n = 7$) was $\alpha = 0.90$, indicating good reliability overall. These data provided supporting evidence that the organizational support variable scale yields consistent results and is therefore reliable.

Innovative Work Behavior

The innovative work behavior variable scale was created using five FEVS questions. According to de Jong and den Hartog (2010), innovative work behavior typically includes exploration of opportunities and the generation of new ideas (creativity related behavior), but also can include behaviors directed to implement change, apply new knowledge, or improve processes to enhance personal and/or business performance (implementation oriented behavior). The variable scale for innovative work behavior ($n = 5$) was calculated in the SPSS application by summing the questions for each factor and dividing by the number of questions to compose the original scale. Skew and kurtosis coefficients were analyzed to determine whether the data were substantially non-normal. Table 8 shows that the data satisfied the assumption of normality for the innovative work behavior variable scale: $S = -0.27$, and $K = -0.57$.

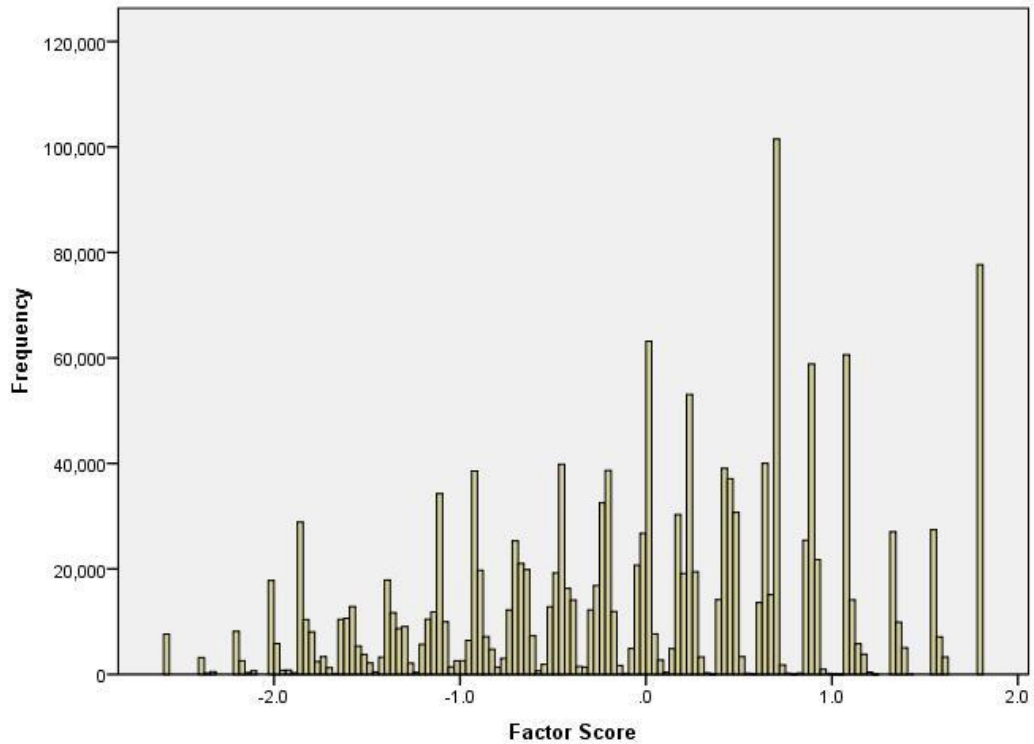
The histogram (see Figure 3) shows that respondents' ratings on the component variables go up (i.e., moving towards Strongly agree), the innovative work behavior scale also goes up. It also reflects a tendency for respondents to have middle ratings on the component variables, with more very high than very low ratings. Given the large sample size, $N > 400,000$, the data can be assumed to be normally distributed.

Table 8

Innovative Work Behavior Variable Scale Statistics

Scale Statistics		Population	Sample
<i>N</i>	Total	1,755,515	421,748
	Valid	1,572,871	379,306
	Missing	182,644	42,442
Mean		0.00	
SD		1.00	
SE		0.00	
Skewness		-0.27	
SE of skewness		0.00	
Kurtosis		-0.57	
SE of kurtosis		0.01	

Note. Mean values reflect listwise deletion of scale component variables.



Histogram based on weighted analysis

Figure 3. Histogram of the Innovative Work Behavior Scale Variable

Cronbach’s alpha testing was used to determine data reliability. Reliability in statistics and psychometrics is the overall consistency of a measure (Field, 2013). A measure is said to have a high reliability if it produces similar results under consistent conditions. The Cronbach’s alpha score for the innovative work behavior variable scale (n = 5) was $\alpha = 0.86$, indicating good reliability overall. These data provided supporting evidence that the innovative work behavior scale yields consistent results and is therefore reliable.

Correlation Analyses

Three scales were used in this analysis - innovative work behavior (criterion variable) and organizational justice and organizational support (predicator variables). Pearson correlations showed the linear relationship, or correlation (r), between the study variables. All correlations show strong, positive significant linear relationship. The organizational justice scale had a stronger relationship to the innovative work behavior scale than did the organizational support scale. The strength of the relationships was $r^2 = 0.73$ and $r^2 = 0.52$, respectively Table 9 presents the correlation data for the three scales.

Table 9

Pearson Correlations between Criterion and Predictor Variables

Variables	Innovative work behavior	Organizational justice	Organizational support
Innovative Work Behavior	1	0.85*	0.72*
Organizational Justice		1	0.77*
Organizational Support			1

*Note.**Significant at $p < 0.001$ (2-tailed)

Research Question 1

Research Question 1 examined the relationship of public employees with respect to levels of organizational justice, organizational support, and innovative work behavior.

As it relates to the organizational justice variable, the research question was framed by the idea that employees who believe they are treated fairly (e.g., with dignity and respect, equal enforcement of policies, justifications or explanations from colleagues and supervisors; Bies, 2005; Lou, 2007) are more likely to engage in innovative work behavior. Accordingly, the study looked at the correlation between organizational justice and innovative work behavior among public sector employees. With respect to the organizational support variables, the study was based on the idea that employees who perceive that their organization values their contributions, supports them, and cares about their well-being are more likely to engage in innovative behavior. Thus, the data analysis sought to determine whether a positive correlation exists between organizational support and innovative work behavior in the public sector workforce. For each variable, a correlational analysis was employed to measure the direction of the relationship between each of the predictor variables, organizational justice and organizational support, and the criterion variable innovative work behavior.

Multiple linear correlation analysis was performed to test the statistical relationship between the predictor variables - organizational justice and organizational support without age, gender, and education level - and criterion variable. An analysis of variance (ANOVA) tested the null hypothesis (H_0): all correlation coefficients = 0, or $R^2 = 0$. For Correlation 1, the ANOVA (see Table 10) was significant, $F(2, 292, 721) = 414,855, p < 0.001$. Thus, the null hypothesis (H_0) was rejected, indicating the correlation coefficient for at least one predictor variable differed significantly from 0. The correlation model (organizational justice and organizational support) produced an $R^2 = 0.739$; meaning that these variables explained approximately 73.9% of the variance in the innovative work behavior scale.

Table 10

Correlation Analysis of Criterion and Predictor Variables

Model		<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
1	Correlation	216,300.72	2	180,150.36	414,855.31	0.000
	Residual	76,310.78	292,721	0.26		
	Total	292,611.50	292,723			

A summary of the coefficients analyzed can be found in Table 11. Both the organizational justice and organizational support scales were significant at $p < 0.001$. Here, $H_0: \beta_{OJ} = 0$ and $H_0: \beta_{OS} = 0$, so both null hypotheses were rejected. Based on the Beta values, the organizational justice scale, $\beta = .72$, was much more important than organizational support, $\beta = .18$, in predicting innovative work behavior in public sector employees. Thus, as the value of the predictor scales (organizational justice and organizational support) increased, so did the value of the criterion (innovative work behavior). For the organizational justice and organizational support scales to increase, the component variables of each scale also must increase, moving from less agreement to more agreement with a statement.

When conducting multiple correlation analysis, researchers must be aware of the potential for multicollinearity. Multicollinearity is a phenomenon in which one predictor variable in a multiple correlation model can be linearly predicted from the others with a substantial degree of accuracy (Cramer & Howitt, 2004). A variance inflation factor (VIF) factor was used to identify any correlation effects. VIF value quantify the severity of multicollinearity in an ordinary least squares correlation analysis. According to Everitt, 2002, a VIF value between 1 and 10 indicates no

multicollinearity, while a VIF value that is < 1 or > 10 indicates multicollinearity. Table 11 shows that the VIF for all variables was 2.43 which indicates no multicollinearity.

Table 11

Correlation Coefficients Analyzed for Research Question 1

Variables	<u>Unstandardized</u>		<u>Standardized</u>			<u>Collinearity Analysis</u>	
	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	<i>Tolerance</i>	<i>VIF</i>
Constant	0.02	0.001		18.72	0.000		
Organizational Justice	0.71	0.001	0.72	486.96	0.000	0.413	2.423
Organizational Support	0.18	0.001	0.18	121.42	0.000	0.413	2.423

Research Question 2

Research Question 2 sought to identify the best set of factors among organizational justice, organizational support, and the selected descriptive factors (i.e., age, gender, and educational level) that explained the innovative work behavior of public sector employees. Correlation analysis was performed to test the statistical relationship between the descriptive variables and criterion variable.

Multiple linear correlation analysis was performed to test the statistical relationship between the predictor variables (organizational justice, organizational support, age, gender, and educational level) and criterion variable innovative work behavior. The ANOVA tested the null hypothesis (H_0): all correlation coefficients = 0, or $R^2 = 0$. For Research Question 2, the ANOVA was statistically significant, $F(8, 282,251) = 100,574.1, p < 0.001$. Thus, the null hypothesis was rejected.

The correlation model (organizational justice, organizational support, age, gender, and educational level) produced a result of $R^2 = .740$, and thus, these variables explained approximately 74% of the variance in the innovative work behavior scale. In Research

Question 1 (without age, gender, and education level), the $R^2 = .739$; therefore, adding gender, age, and educational level as predictors did not improve the overall model. Table 12 presents a summary of the correlation coefficients analyzed for Research Question 2.

Table 12

Correlation Coefficients Analyzed for Research Question 2

Variables	Unstandardized		Standardized		<i>p</i>
	<i>B</i>	<i>SE</i>	β	<i>t</i>	
Constant	-0.01	0.003		-4.08	0.000
Organizational Justice	0.71	0.001	0.71	475.49	0.000
Organizational Support	0.18	0.001	0.18	121.17	0.000
Gender	0.01	0.002	0.004	3.97	0.000
Age Group: 40-49	0.05	0.003	0.02	17.67	0.000
Age Group: 50-59	0.07	0.003	0.03	27.03	0.000
Age Group: 60 and over	0.05	0.003	0.02	15.32	0.000
Educ. Level: BS Degree	-0.03	0.002	-0.02	-13.72	0.000
Educ. Level: More than BS Degree	-0.02	0.002	-0.01	-8.28	0.000

As expected with the large sample size ($N > 283,904$ depending on the variables involved), all predictors were significant at $p < 0.001$. Thus, more emphasis is placed on what the relationships show and their strength. In Research Question 1, the Beta values showed that the organizational justice scale, $\beta = .71$, was by far the most important predictor, with the organizational support scale, $\beta = .18$, the next most important in predicting innovative work behavior. In examining the statistics for Research Question 2, gender, age, and educational level were found to be relatively unimportant and did not improve the R^2 . Specific findings included:

1. For organizational justice, $\beta = 0.71$, which indicates that if the organizational justice scale increased by 1, then the predicted innovative work behavior value increased by 0.71 points, holding all other predictor variables (PVs) constant.

2. For organizational support, $\beta = 0.18$, which indicates that if the organizational justice scale increased by 1, then the predicted innovative work behavior value increased by 0.18 points, holding all other PVs constant.
3. For gender, $\beta = 0.01$. Male was the reference category, and thus, a female had a predicted innovative work behavior value 0.01 points higher than that of a male, holding all other PVs constant.
4. "Under 40" was the reference category for age group; therefore:
 - a) For age group 40 to 49, $\beta = 0.05$. Thus, this age group had a predicted innovative work behavior value 0.05 points higher than that of the age group under 40, holding all other PVs constant;
 - b) For age group 50 to 59, $\beta = 0.07$. Thus, this age group had a predicted innovative work behavior value 0.07 points higher than that of the age group under 40, holding all other PVs constant;
 - c) For age group 60 and over, $\beta = 0.05$. Thus, this age group had a predicted innovative work behavior value 0.05 points higher than that of the age group under 40, holding all other PVs constant.
5. For education group, "Less than a BS Degree" was the reference category; therefore:
 - a) For education group BS Degree, $\beta = -0.03$. Thus, this education group had a predicted innovative work behavior value 0.03 points lower than that of the education group Less than a BS degree, holding all other PVs constant;
 - b) For education group, More than a BS Degree, $\beta = -0.02$. Thus, this education group had a predicted innovative work behavior value 0.02 points lower than

that of the education group with less than a BS degree, holding all other PVs constant.

Therefore, the organizational justice and organizational support scales were found to drive predicted innovative work behavior, with minor influences of gender, age, and educational level.

Summary

The primary objective of this correlational study was to assess the relationships between organizational justice, organizational support, and innovative work behavior among public sector employees. A secondary objective was to identify the best set of factors among organizational justice, organizational citizenship, and selected descriptive factors (age, gender, and educational level) to explain these employees' innovative behavior.

This chapter presented the results of analyses designed to answer the research questions posed by this study. The study sought to expand our knowledge of innovative work behavior within the context of the public sector. Specifically, the study examined the effect that perceptions of justice/fairness and organizational support can have on public sector employees' ability to engage in innovative work behavior. A reliability analysis confirmed that the survey questions represented the primary study variables and were internally consistent (Wuensch, 2012). Research questions 1 and 2 were examined with correlational analyses. Statistical analyses revealed that the organizational justice variable was related more strongly to innovative work behavior than was organizational support. Beta values indicated that the organizational justice scale, $\beta = 0.71$, was the most important predictor of innovative work behavior, with organizational support, $\beta = 0.18$, the next most important in predicting innovative work behavior among public

sector employees. The correlational analysis ($R^2 = 0.739$) indicated that the organizational justice and organizational support variables taken together explained 73.9% of the variance in innovative work behavior. However, adding the descriptive variables of gender, age, and education level ($R^2 = 0.740$) did not improve the overall model.

R-squared (R^2) is a statistical measure of how close the data are to the fitted regression line (Field, 2013; Garson, 2012), and depicts the percentage of response variable variation that is explained by the linear model. The R^2 values identified by this analysis are relatively high, $R^2 = .739$ and $R^2 = .74$, respectively. It is important to acknowledge that other factors may have influenced these outcomes. The data set used for analysis was very large, $N > 400,000$. With large sample sizes, the likelihood that values will continue to grow may make R^2 less sensitive to subtle changes. Similarly, the population of interest—federal employees—may share similar attitudes and, thus, respond in similar ways. Lastly, responses to individual survey items may be affected by how employees felt overall rather than about a discrete or specific survey item. Even with these limitations, findings still provide important and useful information as it relates to understanding innovative work behavior in the public sector.

CHAPTER 5

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Innovation in the workplace has been a popular topic for years, but very little research has been conducted on the connections between employees' perceptions of organizational justice and organizational support on innovative work behavior in the public sector. The prevailing literature on innovative work behavior, which is limited in scope and breadth, has concentrated primarily on private sector activities (Vigoda-Gadot, Shoham, Schwabsky, & Ruvio, 2008). Moreover, the lack of empirical research has led to potentially inaccurate stereotypes regarding the distinctions between public and private organizations (Rainey & Bozeman, 2000). The current study addressed the lack of attention to innovation and public sector organizations and provided some understanding of the relationships between organizational justice, organizational support, and employee innovative work behavior.

Findings from this study provide relevant information to managers, leaders, and politicians as they strive to make public sector organizations more efficient, effective, and adaptable to the social, economic, and political changes occurring in the 21st century. Results also provide key information to educators, human resource professionals, and others prepare the next generation of workers and workplaces to embrace innovation as a regular part of their job duties and responsibilities.

Research Questions

1. What is the relationship of public employees with respect to levels of organizational justice, organizational support, and innovative work behavior?

2. What is the best set of factors among organizational justice, organizational support, and selected descriptive variables of age, gender, and level of education that explains public sector employees' innovative work behavior?

Summary of the Study

Researchers have posited that broad organizational factors (e.g., perceptions of fairness and a supportive organizational must be present for creativity and innovative work behavior to flourish (Amabile et al., 1996; West, 2002; West & Farr, 1990). Relationships between organizational justice, organizational support, and innovative work behavior in public sector employees were examined and measured. A better understanding of how employees' perceptions of organizational justice and organization support influence decisions to act innovatively can yield useful insights in understanding the innovative work behavior of public sector employees.

Equity (Adams, 1965) and social exchange (Blau, 1964) theories were employed to explain that public sector employees' perceptions of organizational justice and organizational support are related to innovative work behavior. Equity theory posits that people derive satisfaction and are motivated by comparing their inputs (e.g., skills, education, characteristics, enthusiasm) and outputs (e.g., salary, benefits, recognition, advancement) with those of other people in the same organization (Ivancevich et al., 2014). Employees' perceived fairness in the ratio between efforts and rewards signals that the organization recognizes their abilities and contributions and thus, employees are more likely to engage in innovative work behavior (Young, 2012). Conversely, perceptions of inequity create tension within employees and motivate them to take action that will reduce perceived inequity, such as following the status quo rather than engaging in innovative work behavior.

Social exchange theory emphasizes the norm of reciprocity (Gouldner, 1960) and posits that social exchanges involve unspecified obligations in which a party who receives favorable treatment tends to return the favor. Social exchange is characterized by a series of interactions that generate obligations and liberties between members in a workplace over time (Amo & Kolvereid, 2005; Blau, 1964; Cropanzano & Mitchell, 2005; Cropanzano et al., 2002; Maurer et al., 2002; Settoon et al., 1996). These interactions tend to be mutually dependent and contingent upon a reciprocal relationship between two parties. Under the right conditions, these reciprocal interactions can generate high quality workplace relationships (Maurer et al., 2002). Employees who are satisfied with the outcomes of workplace exchanges are more inclined to respond with greater performance, including innovative work behavior (Shaw et al., 2009).

Perceived organizational justice and support result in better organizational outcomes, e.g., reduced absenteeism, positive citizenship behaviors, increased job satisfaction, and reduced employee turnover (Allen et al., 2003; Eisenberger et al., 1986; Schilpzand et al., 2013; Xerri, 2014). However, no studies were found that examined how organizational justice and organizational support influence public sector employees' innovative work behavior. Therefore, this study examined this question to address the existing gap in the literature.

The research used a non-experimental, quantitative correlational design with an existing survey instrument and archival data. A quantitative method was selected as the best approach to analyze the large dataset (Field, 2013) to provide a descriptive representation of relationships between predictor variables, organizational justice and organization support, and the criterion variable, innovative work behavior. Correlational analysis calculated relationships between organizational justice and organizational

support as perceived by federal employees, and their decisions to engage in innovative work behavior. Correlation analysis tested the statistical relationships between criterion and predictor variables, as well as descriptive variables (i.e., age, gender, educational level) in public sector employees.

Data were obtained from the United States Office of Personnel Management (OPM), which conducts annual surveys of federal employees. The sample for the study included 421,748 employees from 82 federal agencies worldwide. The Federal Employees Viewpoint Survey (FEVS) is a tool designed to measure employee perceptions of conditions that characterize successful organizations (Office of Personnel Management, 2015a). The 2015 FEVS was a 98-item, web-based, self-administered survey administered from April-June 2015. Survey items for the analysis were selected from the FEVS based on respondent perceptions of organization justice, organizational support, and innovative work behavior. Statistical analyses were conducted to provide support for the research questions by examining the presence and strength of study variable relationships.

The primary research question that guided this study endeavored to determine the influence of organizational justice and organizational support on individuals' decisions to exhibit innovative work behavior. Analysis related to the first research question examined the relationship between organizational justice, organizational support, and innovative work behavior, while the second question sought to identify the set of factors among organizational justice, organizational support, and selected descriptive factors (gender, age, and educational level) that best explained the innovative work behavior of public sector employees.

Discussion

To date, insufficient research has been conducted in the public sector context on the effects of organizational justice and organizational support on an employee's decision to engage in innovative work behavior. This study sought to determine the degree of relationships between organizational justice and organizational support and innovative work behavior among public sector employees. FEVS respondents' perceptions of organizational justice, organizational support, and innovative work behavior were operationalized and measured to investigate existing relationships.

All correlations between organizational justice, organizational support, and innovative work behavior variables showed a strong, positive significant linear relationship. Organizational justice was the most important predictor of innovative work behavior, with organizational support the next most important in predicting innovative work behavior among public sector employees. Selected descriptive factors (i.e., age, gender, and educational level) also were examined to determine the extent they explained federal employees' the innovative work behavior. However, adding these descriptive variables did not improve the overall model, suggesting that they were relatively unimportant.

According to Aryee et al. (2002) and Luo (2007), organizational justice in the form of fair rules and regulations for employees and input to organization and output received and fairness in interpersonal matters are important factors in organizations. Consistent with the literature, findings of this study suggested that when employees believe they are treated fairly (e.g., with dignity and respect, equal enforcement of policies, justifications or explanations from colleagues and supervisors: Bies, 2005; Luo, 2007) they are more likely to engage in innovative work behavior. Similarly, employees

who perceive that an organization values their contributions, supports them, and cares about their well-being are more likely to engage in innovative work behavior.

This study provided information that can be used to make a positive difference in the public sector workplace. First, it supports existing literature that has used the equity and social exchange theories to understand how organizational justice and support influence employees' decisions to engage in innovative work behavior. Scholars have found that positive perceptions of organizational justice and organizational support increase employees' feelings of obligation and probability to engage in positive reciprocity (e.g., Aryee et al., 2002; Bies, 2005; Luo, 2007; Rhoades & Eisenberger, 2002). High quality social exchange relationships are likely to motivate employees to engage in behaviors that have favorable consequences for an organization over time, in part because they tend to identify the organization's well-being with their own and may feel a relational obligation to support the organization (Rhoades & Eisenberger, 2002). Moreover, employees' perceived fairness of the ratio between efforts and rewards signals that their organization acknowledges their abilities and contributions and thus, makes them more likely to engage in innovative work behavior (Young, 2012). By understanding what creates an environment that promotes innovative work behavior in the public sector workplace, agencies and organizations can develop Human Resources management policies, guidelines, and training that promote innovation in the workplace.

Second, this study explained the effect that perceptions of justice/fairness and organizational support can have on public sector employees' ability to engage in innovative work behavior. Specifically, the primary objective of this study was to assess the degree to which public sector employees' perceptions of organizational justice and organizational support in their work environments, as well as selected descriptive factors

(i.e., age, gender, and educational level) relate to innovative work behavior. Lastly, findings from this study also indicated that public sector employees are influenced by organizational justice and organizational support in the same way as are private sector employees, which leads to the conclusion that public sector employees are not very different from private sector employees with respect to what influences their decisions to engage in innovative work behavior.

Conclusions

Public sector organizations must address the public demand for more efficient, effective, and open government, while balancing simultaneously the constraints imposed by uncertain economic and political environments that change rapidly. Public organizations can overcome these challenges by positioning public sector organizations to become more innovative and efficient, and enabling them to meet the needs of the public that they are designed to serve more effectively. Understanding how organizational justice, organizational support, and selected descriptive factors of age, gender, and level of education influence the decision of public sector employees to act innovatively can yield useful insights about innovative work behavior on the part of public sector employees.

When public sector employees perceive that their organizations treat them fairly, value their contributions, and care about their well-being, they are more likely to engage in innovative work behavior, which refers to the willingness to share novel ideas (idea generation), discuss those ideas with co-workers and leaders in their organization (idea promotion), and work to implement those ideas (idea realization). Both organizational justice and organizational support played direct roles in a federal employee's decision to engage in innovative work behavior.

Results showed a strong, positive, and significant linear relationship between organizational justice and innovative work behavior. Ensuring that an organization cultivates a sense of justice/fairness and provides support to employees can benefit public sector organizations through increased innovative work behavior. Examples of the ways in which public sector leaders can strengthen an employee's perception of organizational justice include establishing fair procedures to allocate rewards; providing detailed and timely explanations for decision procedures and outcomes; tailoring communication to meet employees' specific needs; treating employees with respect and dignity; dealing with employees in a truthful manner; following open and fair policies and procedures, and discussing with them the implications of decisions concerning their job.

Providing supervisors with training in how to implement fair practices in their interactions with subordinates may be helpful. This is particularly important as managers and leaders face the current challenges in the 21st century of leading and treating a diverse workforce in an equitable and fair manner. Diversity in the workforce can be related to various factors, including age, gender, culture, education, employee and family status, regional and national origin, cognitive style, religion, and race, among others (Agrawal, 2012). Diversity management focuses on creating a positive work environment in which all individuals' similarities and differences are valued, so that all can maximize their contributions to the organizations' strategic objectives and goals (Shaban, 2016). Scholars also have found that justice perceptions tend to decrease over time on the part of newcomers to an organization, which might be attributable to the waning *honeymoon effect* (Tae-Yeol, Xiao-Wan, & Kwok, 2013). To prevent this, organizations should provide realistic previews of fairness issues in the organization to reduce unrealistic expectations.

Ways in which organizations can foster employees' perceptions of being supported include providing annual and sick leave, flexible work hours, etc.; acknowledging individuals who do a good job both publicly and privately; expressing pride in employees' goals and values; providing help for those who are experiencing problems (e.g., employee assistance programs), and demonstrating that the organization is willing to help them achieve success in performing their jobs (e.g., providing training, professional development opportunities, and other resources).

Age, gender, and educational level also were examined to determine the extent to which they explained the innovative work behavior of federal employees. Results indicated that employee descriptive factors used in this study did not influence an employee's decision to engage in innovative work behavior within the federal government to any significant extent. Based on these results, all employees, regardless of age, gender, and educational level, have the potential to engage in innovative work behavior.

Practical Implications and Recommendations

There are additional opportunities to perform further empirical research on organizational justice, organizational support, and innovative work behavior. First, the data used in this study were collected via a self-report questionnaire. For example, organizational justice, perceived organizational support, and innovative work behavior were measured according to respondents' own attitudes. Future research could improve on this method by asking respondents' supervisors and colleagues to answer related questionnaires, and to measure the items required more accurately.

Second, there is an opportunity for more extensive analyses to confirm the extent to which the items measured similar and valid constructs. Based on existing literature,

this study created and tested subscales that were employed to represent study variables. Reliability analyses performed in the study confirmed good internal consistency of the variable items. For example, dimensions of organizational justice (distributive, procedural, and interactional) were measured as a single construct. Empirical studies have shown that these three components of organizational justice tend to be correlated and often interact to influence employees' attitudes and behaviors (Sweeney & McFarlin, 1993; Tyler & Bies, 1990). However, future research may focus on differentiating between the three types of justice. Given that each dimension of organizational justice may influence the attitudes and behavior of individuals differently, it could be useful to study the way in which its different types affect innovative work behavior. Similarly, measuring the way in which different types of organizational support (i.e., training, professional development, budget, etc.) affect an employee's decision to engage in innovative work behavior would help managers and leaders identify where they should place their emphasis.

Third, future research also can provide additional information and extensions to the propositions examined here. For example, more information is needed about the mechanisms (i.e., participative, decentralization, and financial) through which organizational justice and perceived organizational support translate into increased innovative work behavior (Bysted & Jespersen, 2014).

In addition, while this study focused on organizational justice and organizational support as the main predictors of employee innovative work behavior in the federal government, it would be interesting to identify the predictors of employee innovative work behavior in other organizations, such as local and state government agencies, and non-profit organizations.

Despite these limitations, the study improves our understanding of innovation in the public sector and contributes new insights about some of the challenges the sector faces as it strives to make its organizations more efficient, effective, and adaptable to current social, economic, and political changes. Specifically, this research provided supporting information that indicated that organizational attributes, specifically organizational justice and organizational support, influence an employee's decision to engage in innovative work behavior and should be considered when examining organizational policies and practices.

Further, this study highlighted the importance of innovative work behavior in the public sector and how critical it is to address the challenges of today's highly competitive and dynamic work environment. To meet these challenges, the public sector needs workers who are more agile, curious, and committed to continuous learning. For the past several decades, workers have been required to master only their areas of expertise, but subject matter expertise is no longer sufficient (Herring, n.d.). In today's world, applying one's knowledge to an organization's operations is only part of the challenge. To address 21st century challenges, the public sector requires leaders and employees who can generate new opportunities, design and promote creative solutions, and implement new ideas. Simply put, the public sector needs innovative workers, not just knowledge workers. Innovation workers differentiate themselves through their ability to understand context, judge situations, and deviate from established norms to create new solutions.

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APPENDIX A
AGENCIES AND SUBAGENCIES THAT PARTICIPATED IN THE
2015 FEDERAL EMPLOYEE VIEWPOINT SURVEY (FEVS)

Agency Codes

AF	Department of the Air Force
AG	Department of Agriculture
AJ	National Endowment for The Arts
AM	U.S. Agency for International Development
AR	Department of the Army
BD	Merit Systems Protection Board
BF	Defense Nuclear Facilities Safety Board
CM	Department of Commerce
DD	DoD 4th Estate
DJ	Department of Justice
DL	Department of Labor
DN	Department of Energy
EB	Export Import Bank
ED	Department of Education
EP	Environmental Protection Agency
FC	Federal Communications Commission
FJ	Chemical Safety/Hazard Investigation Bd
GG	Office of Government Ethics
GS	General Services Administration
HE	Department of Health and Human Services
HF	Federal Housing Finance Agency
HS	Department of Homeland Security
HU	Department of Housing and Urban Development
IF	Inter-American Foundation
IN	Department of the Interior
KS	Corp For National and Community Service
MC	Federal Maritime Commission
NN	National Aeronautics and Space Administration
NU	Nuclear Regulatory Commission
NV	Department of the Navy
OM	Office of Personnel Management
OS	Occupational Safety & Health Review Cmsn
SE	Securities and Exchange Commission
SI	Small Agencies with Too Few Respondents
ST	Department of State
SZ	Social Security Administration
TD	Department of Transportation
TR	Department of the Treasury
VA	Department of Veterans Affairs

PLEVEL1 Codes (one level below agency)

AF0D AFE - US Air Forces in Europe
AF0J AET - Air Education & Training Command
AF0M AFR - HQ Air Force Reserve Command
AF0R PAF - Pacific Air Forces
AF0V SOC - Air Force Special Operations Command
AF17 IMS - AF Installation and Mission Support
AF1C ACC - Air Combat Command
AF1L AMC - Air Mobility Command
AF1M MTC - Air Force Materiel Command
AF1S SPC - HQ Air Force Space Command
AFGS GBS - Global Strike Command
AFHQ USAF Headquarters
AG01 Farm and Foreign Agriculture Services (FFAS)
AG04 Food Safety (FS)
AG05 Natural Resources and Environment (NRE)
AG07 Food Nutrition and Consumer Services (FNCS)
AG09 Rural Development (RD)
AG10 Research Education and Economics (REE)
AG14 Marketing and Regulatory Programs (MRP)
AM02 Overseas
ARAA U. S. Army Accession Command (ARAA)
ARAE U.S. Army Acquisition Support Center (ARAE)
ARAS U.S. Army Intelligence and Security Command (ARAS)
ARAT US Army Test and Evaluation Command (ARAT)
ARBA U.S. Army Installation Management Command (ARBA)
ARCE U.S. Army Corps of Engineers
ARFC U.S. Army Forces Command (ARFC)
ARG6 US Army Network Enterprise Tech Cmnd (ARG6)
ARHR U.S. Army Reserve Command (ARHR)
ARMC U.S. Army Medical Command (ARMC)
ARSE HQDA Field Operating Agencies and Staff Support Agencies (ARSE)
ARTC U.S. Army Training and Doctrine Command (ARTC)
ARX0 U.S. Army Material Command (ARX*)
CM03 Census Bureau
CM08 National Institute of Standards and Technology
CM09 National Oceanic and Atmospheric Administration
CM14 U.S. Patent & Trademark Office
DD01 WHS and Serviced Agencies
DD04 Defense Information Systems Agency
DD07 Defense Logistics Agency
DD10 Defense Contract Audit Agency
DD27 Missile Defense Agency
DD34 Defense Commissary Agency
DD35 Defense Finance and Accounting Service

DD60 Defense Health Agency
 DD63 Defense Contract Management Agency
 DJ02 Federal Bureau of Investigation
 DJ03 Bureau of Prisons
 DJ08 U.S. Marshals Service
 DJ09 Office of the U.S. Attorneys
 DJ15 Bureau of Alcohol, Tobacco, Firearms & Explosives
 DJEA Drug Enforcement Administration
 DL03 Bureau of Labor Statistics
 DN15 BONNEVILLE POWER ADMINISTRATION
 EP11 Office of Research and Development
 EP19 Region 06
 GS03 Public Buildings Service (GS03)
 GS30 Federal Acquisition Service (GS30)
 HE04 Centers for Disease Control & Prevention
 HE05 Centers for Medicare And Medicaid Services
 HE06 Food and Drug Administration
 HE08 Indian Health Service
 HE09 National Institutes of Health
 HE10 Office of the Secretary
 HE12 Office of Inspector General
 HS01 Citizenship and Immigration Services (CIS)
 HS02 U.S. Customs and Border Protection (CBP)
 HS03 United States Coast Guard (USCG)
 HS04 Federal Emergency Management Agency (FEMA)
 HS06 Immigration and Customs Enforcement (ICE)
 HS12 U.S. Secret Service (USSS)
 HS14 Transportation Security Administration (TSA)
 IN01 Bureau of Land Management
 IN02 Bureau of Reclamation
 IN03 Bureau of Indian Affairs
 IN05 United States Geological Survey
 IN06 National Park Service
 IN07 Fish and Wildlife Service
 NN22 Glenn Research Center
 NN23 Langley Research Center
 NN51 Goddard Space Flight Center
 NN62 Marshall Space Flight Center
 NN72 Lyndon B. Johnson Space Center
 NN76 John F. Kennedy Space Center
 NV11 Chief of Naval Operations, Immediate Office (NV11)
 NV12 DON, Assistant for Administration (NV12)
 NV18 Bureau of Medicine and Surgery (NV18)
 NV19 Naval Air Systems Command (NV19)
 NV22 Chief of Bureau of Naval Personnel (NV22)

NV23	Naval Supply Systems Command (NV23)
NV24	Naval Sea Systems Command (NV24)
NV25	Naval Facilities Engineering Command (NV25)
NV39	Space and Naval Warfare Systems Command (NV39)
NV52	Commander, Navy Installations (NV52)
NV60	U.S. Fleet Forces Command (NV60)
NV70	U.S. Pacific Fleet Command (NV70)
NVMR	U.S. Marine Corps
TD03	Federal Aviation Administration (FAA)
TD04	Federal Highway Administration (FHWA)
TR93	Internal Revenue Service
TRAJ	Office of the Comptroller of the Currency
TRCC	IRS Chief Counsel
TRFS	Fiscal Service
VA01	VA Central Office
VA02	Veterans Health Administration
VA03	Veterans Benefits Administration

PLEVEL2 Codes (two Levels below agency)

AG0101	Farm Service Agency (FSA)
AG0401	Food Safety and Inspection Service (FSIS)
AG0501	Forest Service (FS)
AG0502	Natural Resources Conservation Service
AG0701	Food Nutrition Service
AG0901	Rural Housing Service
AG1001	Agricultural Research Service (ARS)
AG1403	Animal and Plant Health Inspection Service
AG1501	Office of the Chief Information Officer
HE0406	OFC OF NONCOMM DISEASE, INJURY & ENVIRONMENTAL HEALTH
HE0407	Office of Infectious Diseases
HE0511	CHIEF OPERATING OFFICER
HE0601	OFC OF THE COMMISSIONER
HE0801	OFFICE OF THE DIRECTOR
HE0911	National Cancer Institute
NN6204	Engineering Directorate
NN7210	Engineering Directorate
TR9301	Commissioners Reporting Organizations
TR9302	Deputy Commissioner Operations Supports Reporting Organizations
TR9303	Deputy Commissioner Services & Enforcements Reporting Organizations

APPENDIX B

2015 FEDERAL EMPLOYEE VIEWPOINT SURVEY (FEVS) ITEMS

2015 Federal Employee Viewpoint Survey (FEVS) Items, Data Value and Labels

Item Number and Text		Data Value and Label					
My Work Experience		5	4	3	2	1	X
1	I am given a real opportunity to improve my skills in my organization.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
2	I have enough information to do my job well.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
3	I feel encouraged to come up with new and better ways of doing things.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
4	My work gives me a feeling of personal accomplishment.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
5	I like the kind of work I do.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
6	I know what is expected of me on the job.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
7	When needed I am willing to put in the extra effort to get a job done.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
8	I am constantly looking for ways to do my job better.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
9	I have sufficient resources (for example, people, materials, budget) to get my job done.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know

10	My workload is reasonable.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
11	My talents are used well in the workplace.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
12	I know how my work relates to the agency's goals and priorities.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
13	The work I do is important.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
14	Physical conditions (for example, noise level, temperature, lighting, cleanliness in the workplace) allow employees to perform their jobs well.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
15	My performance appraisal is a fair reflection of my performance.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
16	I am held accountable for achieving results.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
17	I can disclose a suspected violation of any law, rule or regulation without fear of reprisal.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
18	My training needs are assessed.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
19	In my most recent performance appraisal, I understood what I had to do to be rated at different performance levels (for example, Fully Successful, Outstanding).	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	No Basis to Judge

Item Number and Text		Data Value and Label					
My Work Unit		5	4	3	2	1	X
20	The people I work with cooperate to get the job done.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
21	My work unit is able to recruit people with the right skills.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
22	Promotions in my work unit are based on merit.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
23	In my work unit, steps are taken to deal with a poor performer who cannot or will not improve.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
24	In my work unit, differences in performance are recognized in a meaningful way.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
25	Awards in my work unit depend on how well employees perform their jobs.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
26	Employees in my work unit share job knowledge with each other.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
27	The skill level in my work unit has improved in the past year.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
28	How would you rate the overall quality of work done by your work unit?	Very Good	Good	Fair	Poor	Very Poor	

Item Number and Text		Data Value and Label				
My Agency	5	4	3	2	1	X
29 The workforce has the job-relevant knowledge and skills necessary to accomplish organizational goals.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
30 Employees have a feeling of personal empowerment with respect to work processes.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
31 Employees are recognized for providing high quality products and services.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
32 Creativity and innovation are rewarded.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
33 Pay raises depend on how well employees perform their jobs.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
34 Policies and programs promote diversity in the workplace (for example, recruiting minorities and women, training in awareness of diversity issues, mentoring).	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
35 Employees are protected from health and safety hazards on the job.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
36 My organization has prepared employees for potential security threats.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know

37	Arbitrary action, personal favoritism and coercion for partisan political purposes are not tolerated.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
38	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.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
39	My agency is successful at accomplishing its mission.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
40	I recommend my organization as a good place to work.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
41	I believe the results of this survey will be used to make my agency a better place to work.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know

Item Number and Text		Data Value and Label					
My Work Experience		5	4	3	2	1	X
42	My supervisor supports my need to balance work and other life issues.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
43	My supervisor provides me with opportunities to demonstrate my leadership skills.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know

44	Discussions with my supervisor about my performance are worthwhile.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
45	My supervisor is committed to a workforce representative of all segments of society.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
46	My supervisor provides me with constructive suggestions to improve my job performance.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
47	Supervisors in my work unit support employee development.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
48	My supervisor listens to what I have to say.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
49	My supervisor treats me with respect.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
50	In the last six months, my supervisor has talked with me about my performance.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
51	I have trust and confidence in my supervisor.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	
52	Overall, how good a job do you feel is being done by your immediate supervisor?	Very Good	Good	Fair	Poor	Very Poor	
53	In my organization, senior leaders generate high levels of motivation	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know

	and commitment in the workforce.						
54	My organization's senior leaders maintain high standards of honesty and integrity.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
55	Supervisors work well with employees of different backgrounds.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
56	Managers communicate the goals and priorities of the organization.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
57	Managers review and evaluate the organization's progress toward meeting its goals and objectives.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
58	Managers promote communication among different work units (for example, about projects, goals, needed resources).	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
59	Managers support collaboration across work units to accomplish work objectives.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
60	Overall, how good a job do you feel is being done by the manager directly above your immediate supervisor?	Very Good	Good	Fair	Poor	Very Poor	
61	I have a high level of respect for my organization's senior leaders.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know

62	Senior leaders demonstrate support for Work/Life programs.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Do Not Know
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Item Number and Text		Data Value and Label				
My Satisfaction		5	4	3	2	1
63	How satisfied are you with your involvement in decisions that affect your work?	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied
64	How satisfied are you with the information you receive from management on what's going on in your organization?	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied
65	How satisfied are you with the recognition you receive for doing a good job?	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied
66	How satisfied are you with the policies and practices of your senior leaders?	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied
67	How satisfied are you with your opportunity to get a better job in your organization?	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied
68	How satisfied are you with the training you receive for your present job?	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied
69	Considering everything, how satisfied are you with your job?	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied

70	Considering everything, how satisfied are you with your pay?	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied
71	Considering everything, how satisfied are you with your organization?	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied

Item Number and Text		Data Value and Label			
Work/Life		1	2	3	4
72	Have you been notified whether or not you are eligible to telework?	Yes, I was notified that I was eligible to telework.	Yes, I was notified that I was not eligible to telework.	No, I was not notified of my telework eligibility.	Not sure if I was notified of my telework eligibility.

		1	2	3
73	Please select the response below that BEST describes your current teleworking situation.	I telework	I do not telework because I am unable	I do not telework because I choose not to

	1	2	3
Do you participate in the following Work/Life programs?			
74 Alternative Work Schedules (AWS)	Yes	No	Not Available to Me
75 Health and Wellness Programs (for example, exercise, medical screening, quit smoking programs)	Yes	No	Not Available to Me
76 Employee Assistance Program (EAP)	Yes	No	Not Available to Me
77 Child Care Programs (for example, daycare, parenting classes, parenting support groups)	Yes	No	Not Available to Me
78 Elder Care Programs (for example, support groups, speakers)	Yes	No	Not Available to Me

	5	4	3	2	1	X
How satisfied are you with the following Work/Life programs in your agency?						
79 Telework	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied	No Basis to Judge
80 Alternative Work Schedules (AWS)	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied	No Basis to Judge

81	Health and Wellness Programs (for example, exercise, medical screening, quit smoking programs)	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied	No Basis to Judge
82	Employee Assistance Program (EAP)	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied	No Basis to Judge
83	Child Care Programs (for example, daycare, parenting classes, parenting support groups)	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied	No Basis to Judge
84	Elder Care Programs (for example, support groups, speakers)	Very Satisfied	Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied	Very Dissatisfied	No Basis to Judge

APPENDIX C

DESCRIPTIVE VARIABLES AVAILABLE IN DATA SET

VARIABLE	ITEM TEXT	DATA VALUE AND LABEL
DSUPER	What is your supervisory status?	A Non-Supervisor/Team Leader B Supervisor/Manager/Senior Leader
DSEX	Are you:	A Male B Female
DMINORITY	Minority status	1 Minority 2 Non-minority
DFEDTEN	How long have you been with the Federal Government (excluding military service)?	A 5 or fewer years B 6-14 years C 15 or more years
DLEAVING	Are you considering leaving your organization within the next year, and if so, why?	A No B Yes, to take another job within the Federal Government C Yes, to take another job outside the Federal Government D Yes, other
DRETIRE	I am planning to retire:	A Within five years B Not within five years
DAGEGRP	What is your age group?	A Under 40 B 40-49 C 50-59 D 60 or older

- DDIS Are you an individual
 with a disability?
- A Yes
 - B No
- DMIL What is your US military
 service status?
- A No Prior Military Service
 - B Currently in National Guard or Reserves
 - C Retired
 - D Separated or Discharged
- DEDUC What is the highest
 degree or level of
 education you have
 completed?
- A Education Prior to a Bachelors Degree
 - B Bachelors Degree
 - C Post-Bachelor's Degree

APPENDIX D
UNIVERSITY OF GEORGIA
INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL



The University of Georgia

Phone 706-542-3199

Office of the Vice President for Research
Human Subjects Office

NOT HUMAN RESEARCH DETERMINATION

May 24, 2017

Dear [Jay Rojewski](#):

The University of Georgia Human Subjects Office reviewed the following protocol on 5/24/2017:

Type of Review:	Initial Study
Title of Study:	Influences of Organizational Justice and Organizational Support on Innovative Work Behavior in Public Sector Employees
Investigators:	Jay Rojewski and Patricia Mercer
IRB ID:	STUDY00004861
Funding:	None
Grant ID:	None

We have determined that the proposed activity is not research involving human subjects as defined by DHHS and FDA regulations. The project will obtain and use publicly available existing data.

University of Georgia (UGA) IRB review and approval is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities are research involving human subjects, please submit a new request to the IRB for a determination.

Sincerely,

Kimberly Fowler, Director
Human Subjects Office, University of Georgia

APPENDIX E
CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)
INSTIUTIONAL REVIEW BOARD (IRB) APPROVAL

From: Roberson, Lashonda (CDC/OD/OADS)
Sent: Friday, September 8, 2017 9:45 AM
To: Mercer, Lynn (CDC/OCOO/OFR/OBS)
Subject: RE: Advice needed re: Human Subjects Review

Thanks Lynn for your response. Best of luck with your dissertation.

LaShonda

From: Mercer, Lynn (CDC/OCOO/OFR/OBS)
Sent: Friday, September 08, 2017 9:35 AM
To: Roberson, Lashonda (CDC/OD/OADS) <gwk5@cdc.gov>
Subject: RE: Advice needed re: Human Subjects Review

Lashonda,

Thanks for your message. No, the research is for my doctoral dissertation. It is not part of my duties as a CDC employee nor is it being done for CDC.

Thanks. Lynn

From: Roberson, Lashonda (CDC/OD/OADS)
Sent: Friday, September 8, 2017 9:19 AM
To: Mercer, Lynn (CDC/OCOO/OFR/OBS) <lzm2@cdc.gov>
Subject: RE: Advice needed re: Human Subjects Review

Good Morning Lynn,

HRPO has traditionally only reviewed the activity if it's being done for CDC or if it is an activity that employees are performing as part of their duties as a CDC employee. Is this an activity that you will be performing as part of your duties as a CDC employee or is it being done for the CDC?

Thanks,
LaShonda

From: Mercer, Lynn (CDC/OCOO/OFR/OBS)
Sent: Thursday, August 31, 2017 2:46 PM
To: Roberson, Lashonda (CDC/OD/OADS) <gwk5@cdc.gov>
Subject: Advice needed re: Human Subjects Review

Lashonda,

I am working on my dissertation for a Ph.D. in Workforce Education from the University of Georgia (UGA). For my research study, I am using a publicly available data set obtained from the Office of Personnel Management (OPM) related to government wide results from the 2015 Federal Employees Viewpoint Survey (FEVS). I have already received a determination from UGA human subjects/IRB that my study does not involve human subjects (see attached) thus, I did not need to obtain UGA IRB approval. Because I am a current CDC employee, I just wanted to be sure I cleared through the ADS office.

Please let me know if you need additional information or if I need to complete any special forms, etc.

Thanks for your help.

Lynn Mercer

Budget Execution Services Branch Chief

Office of Budget Services (OBS)

Office of Financial Resources (OFR)

Office of the Chief Operating Officer (OCOO)

Centers for Disease Control and Prevention (CDC)

LMercer@cdc.gov |404-639-0190 office| cell 404-271-0868

APPENDIX F

MISSING VALUES (MV) FOR CRITERION AND PREDICTOR VARIABLES

**Missing values (MV) in Organizational justice (OJ), Organizational support (OS),
and Innovative work behavior (IWB) constructs**

OJ MV Statistics

	N	Missing	
		Count	Percent
QN10	225381	2488	1.1
QN15	222127	5742	2.5
QN17	218140	9729	4.3
QN22	213281	14588	6.4
QN24	216757	11112	4.9
QN33	206951	20918	9.2
QN56	212874	14995	6.6
QN65	213970	13899	6.1

OS MV Statistics

	N	Missing	
		Count	Percent
QN1	227369	500	.2
QN11	218950	8919	3.9
QN42	218341	9528	4.2
QN46	217343	10526	4.6
QN48	219128	8741	3.8
QN49	218459	9410	4.1
QN50	218601	9268	4.1

IWB MV Statistics

	N	Missing	
		Count	Percent
QN3	223788	4081	1.8
QN8	226669	1200	.5
QN30	216999	10870	4.8
QN31	216678	11191	4.9
QN32	213780	14089	6.2