

The Mediating Role of Employee Engagement on the Relationship Between Psychological
Safety Perceived by Federal Employees and Customer Satisfaction

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Abstract

An ongoing challenge at U.S. federal agencies is to determine the most effective use of limited funds to successfully deliver services to customers. This public administration challenge is particularly troublesome in the current environment of federal budget cuts and rising customer expectations, especially in nonappropriated federal agencies. One opportunity for federal managers lies in their ability to foster supportive office environments in which employees feel psychologically safe to take risks, admit mistakes, and voice dissent. Research suggests these supportive environments can lead to increased levels of employee engagement. Further research suggests that increased levels of employee engagement can positively influence customer satisfaction. This study proposed and tested in a large federal agency a hypothesized correlation between the perception of psychological safety and customer satisfaction as mediated by employee engagement. The results indicate a positive, statistically significant relationship between federal employees' perception of psychological safety and customer satisfaction at the office level, as partially mediated by employee engagement. These results supported the hypotheses and may serve to improve the appreciation in agencies and federal managers for the role that supportive office environments in which employees feel psychologically safe to take risks, admit mistakes, and voice dissent play in employee engagement and ultimately customer satisfaction.

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Dedication

Dedicated to civil servants everywhere. Please know that you are appreciated.

Chapter I:

Introduction

For almost 3 years, the technology company Google LLC conducted a secret research project to collect and analyze data to determine the attributes that make a “perfect team” (Duhigg, 2016). Dubbed Project Aristotle, this study included primary research on the organization’s best and worst teams as well as secondary research reviewing 50 years of academic findings (Duhigg, 2016). After conducting hundreds of double-blind interviews (“Tool,” 2016) and observations of 180 teams for the presence and strength of 250 attributes (Schneider, 2017), Google published its findings. The research suggested that one particular attribute was more important than any other in contributing to team effectiveness, having a consistent, robust, and statistically significant positive impact on team engagement and customer satisfaction (“Tool,” 2016). This attribute was psychological safety, which Google defined as “an individual’s perception of the consequences of taking an interpersonal risk or a belief that a team is safe for risk taking in the face of being seen as ignorant, incompetent, negative, or disruptive” (“Tool,” 2016).

In 2019 Microsoft Corporation conducted a similar study, partnering with global design firm IDEO to explore the fundamentals of teamwork through a project called The Art of Teamwork (Microsoft Corporation, 2019). Their research, which included interviews with dozens of teams across a variety of industries (Mautz, 2020), concluded that psychological safety

was a “crucial cornerstone to healthy teams” and a top-five trait for any successful team (Microsoft Corporation, 2019).

The concept of psychological safety has gained notoriety in the private sector recently due in part to the widely published results of these studies. However, there might also be benefits to teams and offices in the public-sector with higher levels of psychological safety. The concept of psychological safety in the workplace was first proposed more than 5 decades ago by Schein and Bennis (1965), who identified the concept as an employee’s perception of the consequences of taking interpersonal risks. Kahn (1990), in his seminal research on the topic, suggested possible benefits from workplace psychological safety, labeling it as one of the main preconditions that enabled employees to be fully absorbed in their work, a concept he called *personal engagement*, which he defined as the “harnessing of organization members’ selves to their work roles” (p. 694), a concept now known as employee engagement.

This notion that office environmental factors such as the perception of psychological safety can significantly contribute to workplace benefits such as employee engagement is clearly not new in the literature. More than 60 years ago, Homans (1958) and Thibaut and Kelley (1959) proposed social exchange theory to advance the notion that employees work harder if they have more trust in and commitment to their leaders. This notion has been called one of the “most influential conceptual paradigms for understanding workplace behavior” (Cropanzano & Mitchell, 2005, p. 874). More recently, in its review of federal employee engagement, the Government Accountability Office (GAO, 2015) noted that the strongest driver of employee engagement was an office environmental factor: the perception of employee input being valued, which cannot occur unless employees are willing to bear the emotional, social, and perhaps even economic cost of speaking their minds.

However, despite these findings on the importance of office environmental factors such as trust and safety in influencing employee engagement, research on this specific relationship, as proposed by Kahn (1990), has received scant attention in the research literature. Although the few studies that have directly explored this relationship between psychological safety and employee engagement have found positive relationships, research on the topic is limited, particularly in the federal workforce.

Furthermore, many studies have found positive correlations between employee engagement and a variety of customer outcomes, including customer loyalty (Schaufeli, 2013) and perceptions of customer service (Salanova et al., 2005). In particular, abundant research from the private sector has linked the constructs of employee engagement and customer satisfaction, showing moderate to strong positive correlations between these two constructs (Bakker et al., 2008; Cain et al., 2018; Harter et al., 2002; Hughes & Rog, 2008; Johnson, 1996; Schneider & Bowen, 1992, 1995; Schwartz, 2010). However, similar to the relationship between psychological safety and employee engagement, research on the relationship between employee engagement and customer satisfaction has focused on private-sector organizations, with very little research exploring the relationship in the public sector.

Yet the public sector is also interested in customer satisfaction. As a part of its Reinventing Government initiative, the Clinton Administration directed U.S. federal agencies to implement standards (Executive Order No. 12862, 1993) to make agencies “customer-driven” (Memorandum on Customer Service, 1995). These standards established benchmarks to gauge progress in providing service that is equal to the highest quality of service delivered by analogous private-sector organizations (Memorandum on Customer Service, 1995). However, despite almost three decades of continued customer focus (Executive Order No. 13571, 2011),

the federal government remains “the worst of the worst” in customer satisfaction scores according to Forrester’s Customer Experience Index (Nextgov.com, 2017).

While customer satisfaction for federal programs is consistently low, scores vary by agency, with agencies like the Department of Veterans Affairs (VA) and the Department of Treasury, home of the Internal Revenue Service (IRS), struggling to clear 65% customer satisfaction and agencies like the Department of the Interior, home of the National Parks Service, nearing 80% every year (American Customer Satisfaction Index [ACSI], 2017a, 2018a, 2019, 2020a). Perhaps surprisingly, customer satisfaction scores vary almost as sharply in the agencies themselves. The VA, the IRS, and the Small Business Administration all showed double-digit spreads in recent years (ACSI, 2017a, 2018a, 2019, 2020a), with the VA showing the most dramatic variation, ranging from 63% satisfaction for its Bureau of Primary Health Care to 96% for its National Cemetery Administration (ACSI, 2017a).

Similarly, U.S. federal agency employee engagement scores, measured annually through the U.S. Office of Personnel Management’s Federal Employee Viewpoint Survey (FEVS), vary dramatically as well, with some agencies’ employee engagement scores hovering near 90% and others failing to clear 60% (U.S. Office of Personnel Management [OPM], n.d.). Marked differences can also be seen in intra-agency scores, with some federal agency offices reporting 20% greater engagement levels than others (OPM, 2018b).

These findings on office-level variance in employee engagement and customer satisfaction levels in U.S. federal agencies suggest that office-level factors can influence this variance. Given the research in the private sector on the impact that office-level psychological safety has on employee engagement and the impact that employee engagement has on customer satisfaction, it is worth exploring the existence and strength of the relationship between

psychological safety and customer satisfaction in the public sector to determine the extent to which office-level differences in the perception of psychological safety contribute to office-level differences in customer satisfaction. Research on this broader relationship between psychological safety and customer satisfaction, however, has received negligible academic attention. Only one academic article was discovered that directly tests the relationship between psychological safety and customer satisfaction, concluding that, in the aggregate, the presence of psychological safety can impact customers' perceptions of their service experiences (Finsterwalder et al., 2011). In the federal government, no research has directly reviewed the relationship between psychological safety and customer satisfaction.

This study examines the relationship between psychological safety and customer satisfaction in a U.S. federal government agency, as mediated by the variable of employee engagement. To analyze this relationship, this study used existing survey data from 2013–2019 from the U.S. General Services Administration, a large federal government agency of about 12,000 employees (U.S. General Services Administration [GSA], n.d.a) headquartered in Washington, D.C. A mediation analysis was used to compare the perception of psychological safety from employees in 10 offices in that agency with those same offices' scores on customer satisfaction surveys through the variable of employee engagement. All variables were measured at the office level and controlled by year due to any influence that time may have on the results.

Although no existing academic theory supports the relationship between psychological safety and customer satisfaction directly, that relationship is strongly supported indirectly through two paths, each supported by theory: one that connects supportive office environments, such as those with the presence of psychological safety, with employee engagement, and another that connects employee behaviors such as engagement with customer satisfaction. Further, each

of the two paths will be tested twice: once by measuring the construct of psychological safety using a seven-question *standard* index and once using a single-item *alternate* index. This alternate index would provide an easy way for federal managers to gauge an office's level of employee engagement and customer satisfaction if statistically significant relationships are discovered.

For this first path, this study hypothesized a positive reciprocity dynamic in organizations in which employees are more engaged in supportive office environments perceived to have psychological safety. This hypothesis is supported by organizational support theory (OST) (Eisenberger et al., 1986), which is a type of social exchange theory that suggests a reciprocal relationship between employee and employer, in which good treatment is reciprocated with good performance. For the second path, which explores the relationship between employee engagement and customer satisfaction, this study hypothesized a positive relationship, in which more engaged employees produce higher levels of satisfaction in their customers. Although this relationship is generally undertheorized in the academic world, it is supported by employee satisfaction trajectory theory (ESTT) (Wolter et al., 2019), which suggests that customers are susceptible to employee moods and behaviors. The relationship is also supported by several nonacademic models and frameworks from the business world (Hatfield et al., 1993; Heskett et al., 1994; Korunka et al., 2003; Kruml & Geddes, 2000; Li et al., 2019b; Zapf, 2002).

This mediated relationship between psychological safety and customer satisfaction is illustrated in the study model, as presented in Figure 1. This model shows the independent or predictor variable of psychological safety, the dependent or outcome variable of customer satisfaction, and the proposed mediator variable of employee engagement. Conventional mediation analysis notation is utilized (Baron & Kenney, 1986), in which *a* represents the

coefficient of the association between the predictor variable and a the mediator variable, b represents the coefficient of the association between the mediator variable and the outcome variable, c represents the coefficient of the association between the predictor variable and the outcome variable, c' represents the coefficient of the association between the predictor variable and the outcome variable after controlling for the mediator, and e represents the error residuals for the variables (Baron & Kenney, 1986).

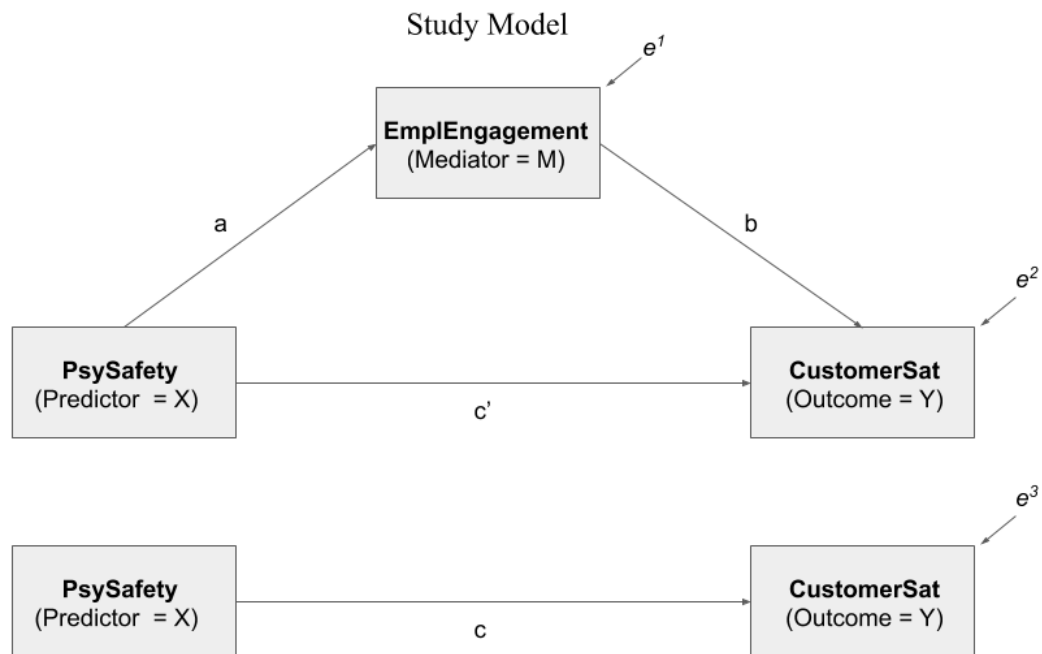


Figure 1. *Study model and variables.*

Importance of the Research Topic

The results of this study could be useful for federal managers operating in an environment of budget cuts (Taylor, 2020; Rabinowitz & Uhrmacher, 2019), rising customer expectations (ACSI, 2017b, 2018b), sinking customer experience scores (Parrish, 2018; Forrester Research, 2019), and directives to improve customer satisfaction scores (Office of Management and Budget [OMB], 2018b) as well as employee engagement scores (OMB, 2014, 2018b), as it is those federal managers who must determine the best use of limited funds to manage their public

administration programs, including the engagement of their employees and the achievement of high customer satisfaction. In particular, understanding the outcomes of supportive federal office environments is critical because of recent actions by senior U.S. federal officials in 2019 and 2020 to suppress the vocalization of dissent, either directly or through the undermining of federal whistleblower protections. These actions include and are exemplified by publicly naming the alleged whistleblower of the President's July 2019 phone call with Ukraine, which Senator Rand Paul (Cheney & Everett, 2020) and Donald Trump did (CNBC, 2019) after implying that the whistleblower be executed (Pettypiece, 2019), or firing three inspectors general in less than a week for discharging their legal obligations to flag concerns that happened to be critical of the current federal administration (Benen, 2020). Actions such as these may deter others who want to report wrongdoing and have contributed to a reduced feeling of psychological safety in the federal government, as reported in a survey of almost 700 federal employees (Government Business Council, 2019). In that survey, which asked about workplace climate in the wake of the president's whistleblower-related actions, 50% of respondents stated that their perception of safety is negative, 34% stated that they would be less likely to report an act of perceived wrongdoing, and 32% stated they were less likely to vocalize differences of opinion over policy (Government Business Council, 2019). Having an understanding of the benefits of a supportive office environment may discourage federal managers from emulating these suppressive actions and instead motivate their employees to speak up if they see wrongdoing, particularly in agencies such as the General Services Administration, which oversees billions of dollars in procurements and relies partially on its culture to ensure employees speak out if they see wrongdoing.

Moreover, given the influence that federal government programs have on the safety and well-being of the public, including through advancing scientific research, providing national

security and public infrastructure, and administering public goods and services such as education and benefit programs, understanding whether and how supportive office environments and engaged federal employees are related to customer satisfaction could ultimately assist federal managers in improving public satisfaction of critical safety and well-being programs.

Additionally, this research is of particular interest to the GSA and other federal agencies that fund much of their operations through fee-based cost reimbursements rather than through the acquisition of annual appropriated funds from Congress. The GSA, for example, receives revenue when federal, state, local, and tribal agencies use its procurement solutions, such as government-wide acquisition contracts, which leverage the federal government's buying power to achieve economies of scale, allowing federal agencies to pay less for common products and services. Other agencies funded through fee-based cost reimbursements include the U.S. Patent and Trademark Office, the Federal Highway Administration, the Consumer Financial Protection Bureau, and programs in the State Department, the Federal Aviation Administration, the Department of Homeland Security, and the U.S. Army (Goldman, 2013; Kruhly, 2013). For the GSA, because most federal agencies are not required to use GSA's centralized procurement services, the agency has an incentive to focus on customer satisfaction in an attempt to gain and retain customers and thus earn revenue and includes customer satisfaction metrics into its annual goals. Having an understanding of the impact of office environment on customer satisfaction could assist the agency, and other agencies that fully or partially self-fund through fee-based programs, in determining whether it is advisable to alter leadership training programs or human resources practices to better assist the agency in meeting its customer and thus revenue goals.

Finally, because the federal workforce is the largest employer in the United States (OPM, 2018c) and employee engagement has remained relatively stagnant, moving from 67% in 2011

(GAO, 2015) to 68% in 2019 (OPM, 2019b), increasing federal employee engagement, even by a small margin, could have significant cost implications. It is significant to note that Rivera and Flinck (2011) estimated that disengaged federal employees cost taxpayers \$65 billion annually in lost productivity (p. 487).

Contribution to the Field

This study sought to bolster the limited scholarly research available on the relationships between the constructs of psychological safety, employee engagement, and customer satisfaction in the federal government. Moreover, the use of mediation analysis in this study allowed for testing of the existence, strength, and mediation of the relationship between psychological safety and customer satisfaction. Findings on the existence and strength of this relationship could help researchers and policymakers in better understanding the antecedents in the federal government to customer satisfaction, which has decreased from 68.6% in 1999 to 68.1% in 2019 (ACSI, 2020b), despite the focus and attention of several administrations.

The study could also assist researchers and policymakers by providing data-supported research on the existence and strength of a hypothesized but little-researched antecedent to federal employee engagement. Data-supported research on the relationship between psychological safety and employee engagement could assist federal agencies such as the OPM, the Merit Systems Protection Board (MSPB), or the GAO to better design a systematic process to assess and ultimately improve employee engagement across the federal government. Finally, given research in the federal government that suggests that increased federal employee engagement is related to decreased turnover, increased innovation, and improved efficiency (OPM, 2015b), the results of the study could assist in creating a more productive, innovative, and efficient federal workforce.

Problem Statement

Only one academic study has directly explored the relationship between psychological safety and customer satisfaction, and none have been discovered that explore this relationship in the federal government. The relationship between psychological safety and employee engagement has been explored by a few studies, which found positive associations between the two constructs both qualitatively (Shuck et al., 2011) and quantitatively (May et al., 2004; Rich et al., 2010). However, the overall lack of studies directly associating psychological safety with employee engagement, as Kahn (1990) proposed, creates a lack of certainty on the existing findings. Additionally, the research on this relationship in the federal workforce is extremely limited, with only two dissertations discovered on ProQuest, one quantitative (Zehr, 2017) and one qualitative (Robinson, 2018), that directly address the topic in addition to one relatively small study conducted in the VA (Bologna et al., 2015). Finally, although private sector research suggests a relationship between employee engagement and customer satisfaction, research on this relationship in the public sector is also limited, with only two recent quantitative studies directly exploring the effect: one in the VA (Partnership for Public Service, 2019a) and one from the United Arab Emirates (Eid et al., 2019). Both of these studies found a strong, positive correlation between public-sector employee engagement and customer satisfaction.

The lack of research on all these relationships in the public sector compels further exploration. This exploration can assist not only in better understanding the relationship between the variables studied, but also in making significant impacts to both employee well-being and customer satisfaction. Additionally, the current environment of proposed budget cuts (Rabinowitz & Uhrmacher, 2019; Taylor, 2020), rising customer expectations (ACSI, 2017b, 2018b), sinking customer experience scores (Forrester Research, 2019; Parrish, 2018), directives

to improve employee engagement and customer satisfaction (OMB, 2018b), and recent actions by senior leaders to suppress the vocalization of dissent (Cheney & Everett, 2020; CNBC, 2019) make this topic salient. From a public policy and public administration perspective, this environment leaves federal managers in need of research-backed findings on how to sustain and improve psychological safety, engagement, and customer satisfaction in their programs while using limited funds.

Research Questions

This quantitative research study proposed a hypothesized mediated relationship at the office level between the perception of psychological safety and customer satisfaction as mediated by employee engagement. The study used a nonexperimental mediation analysis to assess the research hypotheses. Results from this study could assist both scholars and practitioners in better understanding the value the creation of psychologically safe office environments in the federal government has on employee engagement and customer satisfaction.

Specifically, this study proposed four research questions:

- Q1: To what extent does employee perception of psychological safety impact employee engagement?
- Q2: To what extent does employee engagement impact customer satisfaction?
- Q3: To what extent does employee perception of psychological safety impact customer satisfaction?
- Q4: What is the role of employee engagement on the relationship between employee perception of psychological safety and customer satisfaction?

Summary

This study hypothesized a relationship between psychological safety and customer satisfaction in a federal environment as mediated by employee engagement. These relationships are important to explore given the current federal environment, the theoretical support for the hypotheses, the adequate available data to test these hypotheses, and the cost impact of even small improvements to federal employee engagement given the size of the federal workforce.

This chapter outlines the purpose of the study: to examine the relationship between psychological safety and customer satisfaction through the proposed mediator of employee engagement in a large federal government agency. The chapter also describes the importance in helping federal managers to determine the best use of limited funds to sustain interest in their programs, which is an especially important public administration topic given budget cuts and rising customer expectations. The chapter also discusses the study's contribution, namely bolstering the limited scholarly research available on the connection in the federal workforce between the chosen constructs.

In the next chapter, this study explores the main elements of this mediation analysis, investigating how each element is supported by theory as well as the extant research on the study variables. The chapter then lists the study hypotheses and defines and operationalizes the study's key terms. Chapter 3 explains the methodology used, including the rationale for the use of the quantitative approach as well as the data to be collected and analyzed. Chapter 3 also explains how the relationships to be studied was measured and controlled for and lists the limitations of this study's approach. Chapter 4 reveals the results of the analysis, including a summary of the respondent demographics and data and review of the descriptive statistical data, including the direct, indirect, and total effects of the variables studied. Chapter 4 also reveals whether the

descriptive statistical data yielded support for the study hypotheses. Chapter 5 analyzes the results and discusses the implications of the findings, both for the academic community and practitioners, and then summarizes the conclusions of the study and brings attention to future research considerations.

Chapter II

Literature Review

The mediation analysis proposed in this research study has two main elements. The first element explores the relationship between psychological safety and employee engagement in the federal workforce. The second element explores the relationship between employee engagement and customer satisfaction in the federal workforce. This chapter reviews the extant research on these elements, including the theory base for the research, prior research on the topic, the study hypotheses, and the key definitions.

Theory Base for the Research

The relationship between psychological safety and employee engagement is supported by the humanist management perspective, which was originally advanced by Rogers (1951) and Fromm (1956). This perspective is a value orientation that emphasizes a positive psychological approach to organizational management, including the creation of working environments conducive to assisting employees, and thus the organization, in reaching full potential (Denhardt & Catlaw, 2015). In that perspective, the particular theory the research seeks to advance is OST.

Organizational Support Theory

OST is a type of social exchange theory focused on the positive reciprocity dynamic in organizations that suggests that employees perform better in supportive organizational environments (Eisenberger et al., 1997; Shore & Shore, 1995). In OST, there are two related concepts that differentiate the source of positive reciprocity dynamics: perceived organizational

support (POS) (Eisenberger et al., 1986), in which the phenomenon of a positive reciprocity dynamic is credited to perceptions of supportive office environments, and perceived supervisor support (PSS) (Eisenberger et al., 2002), in which the phenomenon of a positive reciprocity dynamic is credited to perceptions of supportive supervisors. Both dynamics have been thoroughly tested and reviewed, with over 20,000 scholarly journal articles discovered on ProQuest that reference POS and over 3,000 scholarly journal articles discovered on ProQuest that reference PSS. These dynamics have been shown to have positive relationships with each other as well; however, Eisenberger et al. (2002) discovered through a 3-month panel design study that PSS positively affects POS, not the reverse.

Of the two theoretical dynamics, POS was the more salient one to use in this study. One reason is that this study sought to understand the effect of psychological safety on employee engagement at the office level, not the supervisor level. Another reason is that the offices to be researched in this study have, as an employee population base, between 40 to 300 employees, which is too large for a single supervisor to manage. As such, this study focused on the POS dynamic in OST.

The POS dynamic in OST has been used in studies of both private-sector and public-sector organizations (Eisenberger et al., 1990; Eisenberger et al., 2010). Although researchers have not indicated differences in the way the dynamic applies based on sector, Eisenberger and Stinglhamber (2011) suggest that differences may exist in the applicability of this dynamic based on the alignment of employee and organizational values. Employees whose values are congruent with their organization's tend to perceive high levels of organizational support (Eisenberger & Stinglhamber, 2011), even if their organization displays these values indirectly, such as through corporate social responsibility efforts managed through public relations campaigns (Ellis, 2008).

Similarly, organizational behaviors that challenge strongly held values have been shown to reduce the perception of organizational support (Eisenberger & Stinglhamber, 2011).

In the public sector, research indicates that public servants tend to have higher levels of value congruence than their counterparts in other sectors (Zhong & Bao, 2019). Additionally, research on value congruence suggests that the level of congruence can help predict employee attitudes and behaviors (Lauver & Kristof-Brown, 2001, p. 454). These findings signal not only the possibility that employee behaviors such as engagement are predictable based on environmental factors, including the degree to which organizations or offices communicate their values (Lauver & Kristof-Brown, 2001), but also that public servants might generally perceive higher levels of organizational support than private-sector employees.

The notion that office environments can influence employee behaviors such as engagement is found in other theories as well. Self-determination theory (SDT) (Gagné and Deci, 2005) proposes that humans are predisposed toward seeking self-actualization (Deci & Ryan, 2000; Ryan, 1995) and asserts that work environments that foster and safeguard basic psychological needs motivate employees by allowing them the space to grow (Deci & Ryan, 2000). According to SDT, these supportive work environments can improve employee work attitudes, performance, and organizational citizenship behavior (Gagné & Deci, 2005).

An allied theory that supports the notion that office environments can influence employee behaviors is public service motivation (PSM) theory (Perry & Wise, 1990). PSM theory has been defined as “a general altruistic motivation to serve the interests of a community of people, a state, a nation, or humankind” (Rainey & Steinbauer, 1999, p. 23) and can be applied to anyone with public service or prosocial tendencies, regardless of sector or status of employment. PSM presupposes high levels of intrinsic motivation in individuals interested in public service, with

that motivation resulting both from intrinsic attributes (Perry & Wise, 1990; Vandenberg, 2011) as well as environmental attributes (Battaglio & French, 2016; Desmarais & Gamassou, 2014). Research even suggests that organizational leaders can influence their employees' levels of PSM through behavior modeling (Wright et al., 2016) or through techniques that influence employees' perception of organizational performance (Ritz, 2009) or the meaning of their work (Kim et al., 2015). High levels of PSM have been positively related to such constructs as organizational commitment (Helmig et al., 2019), job satisfaction (Teo et al., 2016), and lower turnover rates (Hayes & Stazyk, 2019). Additionally, because the constructs of motivation and engagement have been theorized to be closely related, with engagement considered to be highly motivating (Schaufeli et al., 2002), this study's advancement of understanding on public-sector employee engagement provides important context to better understand a facet of public-sector motivation.

Employee Satisfaction Trajectory Theory

In the second element of this study's mediation analysis, the relationship between levels of employee engagement and customer satisfaction was explored. While this relationship has been explored extensively in the business community, it is generally undertheorized in the academic community. One academic theory that provides a basis for this relationship is ESTT (Wolter et al., 2019), which suggests that customers are susceptible to employee moods and behaviors. This theory relies on the emotions as social information (EASI) model (Van Kleef, 2009), which states that an individual's expressions of emotions or level of performance can affect the behavior of an observer, either directly through emotional contagion or indirectly through the observer's inferences about the situation or the people involved.

When applying the EASI model to employee–customer interactions, ESTT posits that a change in emotions or performance by an employee, or even tone in an online chats or website (Li et al., 2019a), would lead to a change in customer satisfaction, with new customers being more susceptible than existing customers. Additionally, the theory suggests that emotional contagion plateaus as the level of employee-customer contact increases, given that customers become accustomed to the employees’ level of satisfaction, as determined by recurrent observations of employee moods and behaviors (Wolter et al., 2019). Finally, the theory suggests that customers with substantial employee contact will become so habituated to the employees’ level of satisfaction, as discerned through their typical attitude and standard level of performance, that the customer will eventually be able to sense and become influenced simply by the trajectory of the employees’ level of satisfaction (Wolter et al., 2019).

While the construct of employee satisfaction is not synonymous with the construct of employee engagement, the constructs are closely related. In fact, some scholars have even claimed that employee engagement measures are redundant with those that measure employee satisfaction (Little & Little, 2006). However, most researchers on the subject agree that engagement goes beyond satisfaction, given that engagement combines satisfaction, which is often seen as a passive construct, with active levels of absorption and vigor (Bakker, 2011; Harter et al., 2002; MSPB, 2008; Partnership for Public Service, 2019a). This lack of concurrence surrounding the degree to which passive and active elements make up the construct of employee engagement has led some scholars to contend that employee engagement has not yet been adequately operationalized (Endres & Mancheno-Smoak, 2008; Macey & Schneider, 2008). In fact, the OPM (2015b) even conceded that its Employee Engagement Index (EEI) does not truly measure the level of employee engagement but rather reflects the perception of the

conditions that lead to employee engagement, including employee satisfaction and discretionary effort.

However, although ESTT is focused on employee satisfaction, the theory's premise that employee mood and behavior can influence customer satisfaction applies to, and is supportive of, the hypotheses posited in this study. Therefore, ESTT is used in the second element of this study. Additionally, given that this study uses employee engagement data from the OPM's FEVS, the study could contribute to operationalizing the construct of employee engagement using the definition provided by the OPM.

Many nonacademic models and frameworks support this relationship theorized in ESTT. One model is service climate (Schneider & Bowen, 1992), which is the notion that positive organizational climates facilitate quality service. According to research on the notion, management expectations can influence employees' shared perception of an organization's climate (Schneider & Bowen, 1995), with positive climates significantly correlated with high levels of customer satisfaction (Johnson, 1996). This effect has even been recognized in the public sector, in which the perception of well-being from Dutch municipalities' front-office employees was positively related to customer satisfaction (Vermeere et al., 2011).

Another model is emotional contagion, which suggests that individuals subconsciously mimic or catch others' emotions (Hatfield et al., 1993). A related concept is emotional labor, which concerns the management of one's feelings so as to display only those emotions consistent with an occupation's or organization's image despite the actual inner emotional state (Hochschild, 1983). According to the emotional labor model, the cheerful mood projected by customer service workers or flight attendants is often not genuine but performed to satisfy occupational expectations. The model suggests that these *surface-acting* employees are exerting

emotional labor to perform these nonauthentic emotions and are therefore more likely to suffer from burnout (Kruml & Geddes, 2000; Zapf, 2002) and have higher rates of turnover (Halbesleben, 2010). However, a meta-analysis asserted that *deep-acting* employees, or those who modify rather than pretend to modify their inner feelings to express appropriate emotions, are more likely to have higher levels of engagement and satisfaction (Halbesleben, 2010; Rich et al., 2010). Regarding customer satisfaction, employees who perform in a deep-acting manner improve customer satisfaction by hindering the transmission of negative emotions to customers while surface-acting employees facilitate its transmission (Bakar et al., 2019; Eneizan et al., 2019; Liu et al., 2019). Studies of emotional contagion have found strong positive correlations between bank teller behavior, whether deeply acted or surface acted, and customer mood and service quality (Pugh, 2001); waiter behavior and customer satisfaction and mood (Lynn, 2003); coffee server behavior and customer satisfaction and service quality, but not mood (Barger & Grandey, 2006); salesperson mood and customer satisfaction and loyalty (Gountas & Gountas, 2007); and call center employee behavior and customer satisfaction (Rothbard & Wilk, 2011).

Service-profit chain is a framework used in the private sector that theorizes a positive, causal relationship between the quality of service provided and the attitudes and behaviors of customers, including satisfaction and profitability (Heskett et al., 1994). Research on the service-profit chain has indicated that leaders who foster high levels of employee engagement, satisfaction, and performance in their employees are more likely to have offices that yield high levels of customer satisfaction (Cavazotte et al., 2020), particularly based on employees' display of energy and dedication (Cain et al., 2018). This relationship is often mediated by the organization's level of commitment to service-oriented behaviors (Agnihotri et al., 2019, Briggs et al., 2020).

Finally, new public management is an outcomes-based approach to public administration that promotes the application of business practices by government (Osborne & Gaebler, 1992), theorizing that embracing innovation and risk-taking would lead to less bureaucratic and more results- and customer-oriented organizations (Frederickson et al., 2016; Osborne & Gaebler, 1992). Research on new public management has indicated that high levels of customer orientation are related to higher levels of customer satisfaction (Li et al., 2019b). Similar to the service-profit chain, this relationship has been found to be mediated by the degree to which an organization embraces new public management's orientation toward the customer (Korunka et al., 2003).

The variety of nonacademic models and frameworks that support this theorized relationship between employee engagement and customer satisfaction gives credence to ESTT and the underlying premise of employee mood and behavior being able to influence customer satisfaction. Similarly, the variety of academic theory and nonacademic frameworks that support the notion that supportive office environments can influence employee behaviors such as engagement gives credence to OST's POS dynamic and the underlying humanist management perspective to organizational management. In sum, this research on the theoretical associations between the study variables allows for a deeper analysis of the study variables themselves.

Research on Study Variables

Psychological Safety

The term *psychological safety* was coined by Schein and Bennis (1965) and explored by Kahn (1990) as an antecedent to employee engagement. Kahn defined psychological safety as “feeling able to show and employ one's self without fear of negative consequences to self-image, status, or career” (p. 708). He proposed that consistent, supportive, and open group behaviors

fostered by competent leaders and informal hierarchies lead to predictable and nonthreatening environments in which employees feel safe to express their thoughts.

The impact that organizational environments have on employee attitudes and behaviors has been heavily studied in the fields of industrial–organizational psychology and behavioral psychology. For example, research has indicated connections between supportive work environments and greater job satisfaction (Rothausen, 1994), greater extrarole effort (Lambert, 2000), increased organizational commitment (Grover & Crooker, 1995; Roehling et al., 2001), improved organizational performance (Perry-Smith & Blum, 2000; Staw et al., 1994), lower levels of emotional exhaustion (Ozeki, 2003), and lower intentions to quit (Randall et al., 1999). Eisenberger et al. (2001) suggested that supportive work environments have such a substantial effect on employees because they build a sense of organizational membership or belonging in employees’ social identities.

Organizational environments can also impact the perception of psychological safety. Edmondson (2004) argued that psychological safety is not the presence of friends at work or the absence of difficult tasks; instead, it is an environment in which employees feel safe to trust each other to contribute to common organizational goals. According to Edmondson (1999), sufficient availability of resources, rewards, and information are helpful in promoting an environment in which employees feel psychologically safe to the extent that those resources reduce employee insecurity, but they are not enough on their own. Instead, a psychologically safe organizational climate occurs when organizational practices consistently demonstrate to employees that their input is sought, valued, and expressible without rejection or reprisal (Baer & Frese, 2003).

Kahn (1990) posited that leaders perceived as unpredictable or threatening reduce employees’ perception of safety, as do those who micromanage, which can be seen as lack of

trust in employees. This finding was corroborated by Lee et al. (2004), who found that organizational inconsistency in demonstrating stated values lowers the perception of psychological safety.

Like Kahn (1990), both Kark and Carmeli (2009) and Dollard and Bakker (2010) proposed a positive relationship between psychologically safe work environments and employee engagement, and Albrecht (2010) supported this notion. In an analysis of evidence from 155 studies on the antecedents of engagement, Bailey et al. (2017) concluded that individual psychological states had the strongest correlation with engagement. They computed the effect sizes of several groupings of engagement antecedents, including psychological states, job-design-related factors, perceptions of management, and perceptions of organizational factors, and found similarly strong effects due to employee perceptions of leadership and organizations, as suggested by OST. Recent research on the topic corroborates this finding and suggests that psychological safety is one of the most fundamental elements of a supportive office environment (Rozovsky, 2015; Edmondson, 2018).

Clark (2020) argued that environments perceived as having low levels of psychological safety are not just problematic at the office-level, but can be problematic for the entire organization. In his model of workplace psychological safety, Clark (p. 6) separated office environments into five levels of psychological safety, each with increasing levels of mutual respect and permission: exclusion, inclusion safety, learner safety, contributor safety, and challenger safety. Environments with lower levels of psychological safety, Clark posited, are more likely to experience cover-up culture, in which employees who learn about fraud, malfeasance, or other unsavory behavior remain silent or self-censor over fears of the negative repercussions of speaking out. In some cases, individual acts of self-preservation can even lead

to serious negative financial repercussions for the entire organization, such as when an organization's ongoing fraud or malfeasance is eventually discovered by the media (Clark, 2020). Environments with higher levels of psychological safety, especially those at the highest level that encourage the expression of dissent, can help organizations improve not just the engagement levels of employees, but also can improve their bottom line through the development of positive organizational habits that lead to more interdependence and, ultimately, more innovation (Clark, 2020).

However, creating a psychologically safe office environment in which employees feel comfortable sharing ideas, flagging concerns, and expressing dissent is not easy (Morrison, 2014). Many factors impact discretionary sharing by employees of their ideas and concerns with someone in a position of authority, a concept known as employee voice (Folger, 1977). A main motivator for employees to engage in upward communication, which by its nature challenges the status quo, is a desire to help the organization, not to simply to gripe or curry favor (Van Dyne et al., 2003). In addition to employees being motivated to share their voices because of the desire to help the organization, employees also express their voice more often and more emphatically when they feel a sense of responsibility (Fuller et al., 2006) or even obligation (Liang et al., 2012) for constructive change. Moreover, employee voice is particularly present in organizations that have an orientation toward the customer (Lam & Mayer, 2013).

In addition to conscious cognitive activities that evaluate whether speaking up will bring about positive organizational change, employees also subconsciously take into account their perception of whether communicating information will bring negative repercussions, either for themselves or their relationships (Grant, 2013; Milliken et al., 2003; Morrison & Milliken 2000). Indeed, robust research has been conducted on the MUM (minimizing unpleasant message)

effect (Rosen & Tesser 1970), in which employees withhold bad news, most often because of the perception of risk due to power asymmetry (Morrison & Rothman, 2009) or due to the perception that the input will not be acted upon (Detert & Trevino, 2010). Research on the MUM effect suggests that both macrocultural issues such as organizational structure and microcultural issues such as supervisor-employee relationships can influence the predisposition to dissent (Detert & Burris, 2007; Kassing, 2000; Straub, 1994). Ultimately these issues slow organizational learning and adaptation (Bisel et al., 2012). However, supervisors can encourage upward dissent and thus mitigate the MUM effect, through actively talking about these issues with subordinates (Zanin et al., 2016).

Indeed, supervisors are critical contributors to workplace climate. In the U.S. federal government, the OPM and the MSPB have noted the importance of supervisors in establishing conditions that lead to mission accomplishment. The OPM (2001) stated that “agencies must make the selection and development of first-level supervisors a top human resource priority” (p. 2). A meta-analysis by the MSPB (2010) of 1500 journal articles suggested that “the most effective way to improve organizational performance is to improve first-level supervisors” (p. 1).

One way supervisors can contribute to the work climate is by fostering an environment with high levels of psychological safety. Supervisors interested in fostering a psychologically safe environment not only must provide mechanisms for employee input but must engage in behaviors that increase the perception that input will be considered. This behavior includes actively soliciting input (Fast et al., 2013), avoiding actions that display impatience or intolerance (Milliken et al., 2003), and reassuring their employees that dissenting ideas will not result in negative repercussions (Walumbwa & Schaubroeck, 2009). Supervisors must understand that dissenting ideas are often inconsistent with existing plans, however. As such,

supervisors must be cognizant of how they respond to dissent. This cognizance could include ensuring they do not seem dismissive of ideas and explaining their rationale behind their decisions so employees can understand the values that drive decision making in the organization (Walumbwa & Schaubroeck, 2009). Actions like these are likely to reduce the suppression of employee voice and help supervisors create a “psychological safety net” (Cordery et al., 2009). The motivation behind creating this cultural element of a psychological safety net is not only to help employees share their voice so that the organization can receive more, and more honest, communication. Cultures in which employees perceive that their ideas are appreciated and considered can also lead employees to feel empowered (Bens, 2007; Leeman, 2010) and thus motivated to put forth their best work (Cordery et al., 2009).

Edmondson (1999) suggested that one principal reason behind the connection between supportive office environments in which employees feel psychologically safe and employee engagement is that employees in these environments have an overall greater sense of trust with the group and feel more comfortable taking risks. When a climate is conducive for interpersonal risk-taking, such as sharing ideas for office improvements or bringing an ineffective policy or inefficient process to a supervisor’s or team’s attention, employees feel empowered and have increased levels of motivation (Idris et al., 2015). Indeed, cultures characterized by psychological safety were found to have better organizational goal attainment (Baer & Frese, 2003). One proposed reason for this is that those offices are better able to carry out unpopular initiatives because employees feel safe to express themselves and voice their concerns (Edmondson, 1999).

The idea of being comfortable expressing oneself should be distinguished from being comfortable in one’s performance of their duties. Organizational leaders can both avoid creating threatening environments while also challenging their employees to embrace out-of-comfort-

zone experiences that allow them to grow professionally. In fact, psychological safety has been proposed to contribute to organizational goal attainment through its allowance for dissent, including allowing for the injection of differing perspectives and the questioning of assertions, a concept known as creative abrasion, a friction that helps improve ideas (Hirshberg, 1999). Environments that are perceived as safe for and encouraging of interpersonal risk taking are posited to allow for more ideas to be shared and ultimately improved through iterative cocreation (Rouse, 2020), leading to more innovation because of better use of team knowledge (Bradley et al., 2012; Liang et al., 2019).

Similarly, psychological safety should be distinguished from the idea of safetyism (Lukianoff & Haidt, 2018), a term used to describe the increasingly popular phenomenon, particularly on college campuses, of giving primacy to harm avoidance, whereby “safety trumps everything else, no matter how likely or trivial the potential danger” (p. 30). In a culture of safetyism, the concept of safety is extended beyond physical and psychological safety to include emotional safety, leading to actions taken to either avoid exposure or provide trigger warnings prior to exposure to ideas that might make others feel emotionally unsafe. Unlike the concept of safetyism, which avoids cognitive friction, the concept of psychological safety embraces cognitive friction inasmuch as the friction serves the best interest of the group (Snow, 2020).

Along with psychological safety, Kahn (1990) also posited two other constructs as antecedents to employee engagement: psychological meaningfulness and psychological availability. Kahn described psychological meaningfulness as work elements that allow employees to feel “worthwhile, useful, and valuable” (p. 704), including challenging work, autonomy, ability to wield influence, and a sense of worthwhileness. Meaningful work promotes employee engagement (May et al., 2004; Munn, 2013; Shuck & Herd, 2012), particularly related

to job challenge, autonomy, and role fit (Binti et al., 2014; May et al., 2004). However, the OPM's (2016c) Intrinsic Work Experience subindex, a part of the OPM's EEI, already aims to assess these conditions. Given this established connection in an existing OPM index between psychological meaningfulness and employee engagement, psychological meaningfulness was not a part of this study.

Kahn (1990) defined psychological availability as a sense of having “the physical, emotional, or psychological resources to personally engage at a particular moment” (p. 714). Similar to psychological meaningfulness, research suggests that psychological availability promotes employee engagement (Asiwe et al., 2017; Chaudhary, 2019; Łaba & Geldenhuys, 2016; Rothmann & Buys, 2011; Rothmann & Rothmann, 2010), as well as engagement in other areas of life, such as in the home (Danner-Vlaardingerbroek et al., 2013). But a consistent finding from researchers when assessing the relationship between psychological availability and engagement is that availability is easily influenced by nonwork characteristics. These characteristics include personal attributes such as extraversion and neuroticism (Jacobs, 2013), baseline availability of mental and physical resources (May et al., 2004; Rothmann & Welsh, 2013; Schaufeli & Buunk, 2003), existing relationships (Asiwe et al., 2017; Rothmann & Welsh, 2013), and the homelife attributes that impact all those characteristics (Danner-Vlaardingerbroek et al., 2013). Kahn and Heaphy (2014) suggested that these nonwork characteristics burden individuals, who then act to protect themselves from further emotional drainage, including through disengagement at work. Given the number of nonwork elements that research has suggested affect psychological availability, psychological availability was not a part of this study.

Employee Engagement

Although appreciable progress has been made researching the topic of psychological safety and supportive office environments, it does not compare to the immense amount of research on the topic of employee engagement itself. In addition to providing foundational research on psychological safety, Kahn (1990) was also one of the first scholars to explore the concept of employee engagement, which he labeled as *personal engagement* and defined as “harnessing of organization members’ selves to their work roles: in engagement, people employ and express themselves physically, cognitively, emotionally, and mentally during role performances” (p. 694). Kahn contrasted this with the idea of *employee disengagement*, which he defined as the “uncoupling of selves from work roles” (p. 694).

Interest in the concept of employee engagement has grown substantially since Kahn’s 1990 article, with only one academic article on the topic in the 1990s with “engagement” in the title, 90 academic articles about the topic in the 2000s, and more than 450 published between 2010 and 2017 (Schantz, 2017). Much of that recent research explores not only employee engagement itself but also its antecedents and its consequences.

Saks (2006) examined six potential antecedents that foster or support employee engagement, finding that the only significant predictor of organizational engagement is POS, the dynamic in OST research that argues that employees perform better in supportive organizational environments when they perceive positive organizational support. Macey and Schneider (2008) had a similar finding, arguing that engagement can be directly influenced through three different paths: the nature of work, leadership, and trust. Trust was seen as the most essential antecedent given that employee actions to take initiative or flag concerns will not as readily occur in the absence of trust (Macey & Schneider, 2008). Similarly, Ahmad (2013) suggested that employees

are most engaged when their basic work needs are met, including an environment that minimizes health, safety, and well-being threats. Rana et al. (2014) indicated that supervisors who apply management practices that promote positive work environments and relationships are more likely to have engaged employees. Finally, Nayak and Sahoo (2015) argued that employees' well-being and work performance are two main antecedents of employee engagement and that both can be influenced by workplace environmental factors, including social support and the promotion of work–life balance. Perhaps in recognition of this connection, the federal government has already implemented progressive policies to assist with work–life balance, including promoting telework and alternative work schedules (Caillier, 2013, 2016) and the Employee Assistance Program, through which the U.S. Department of Health and Human Services offers federal employees free counseling services, health and wellness consultations, stress management solutions, and legal and financial counseling (Federal Occupational Health, n.d.).

The literature shows that the understanding of “engagement” has evolved since Kahn’s (1990) original interpretation of the construct as a personal and transitory experience of psychological presence that “ebbs and flows” (p. 693) throughout a day based on tasks. A more popular understanding of the construct has been to see engagement as a more stable, enduring, and measurable state of mind about the persistent investment of personal energies in the workplace (Bailey et al., 2017; Christian et al., 2011; Schaufeli et al., 2002) and is distinct from job performance. Although job performance is an important component of employee engagement (Saks, 2006), with studies finding a positive correlation between the two constructs (Demerouti et al., 2001; Schaufeli & Bakker, 2004), scholars have identified job performance as conceptually distinct from employee engagement (Rich et al., 2010; Schaufeli & Bakker, 2010)

rather than an outcome. The federal government's understanding of engagement aligns with this interpretation. For example, two of the three elements MSPB (2008) lists as contributors to engagement for federal workers represent more enduring employee characteristics that most likely do not ebb and flow during the day based on tasks: emotional and rational commitment to the organization, discretionary effort, and job satisfaction. Additionally, the OPM (2015b) used as its definition for employee engagement the following interpretation of the construct, which suggests an understanding that employee engagement is more of a stable and measurable ethos than an ever-changing mindset: "The employee's sense of purpose that is evident in their display of dedication, persistence, and effort in their work or overall attachment to their organization and its mission" (p. 1).

OST leans heavily on this more recent interpretation of engagement as stable and measurable as well as the notion that supportive and psychologically safe environments can have positive effects on employee behavior. As stated, OST supposes that employees gain socioemotional benefits from their organization's ability to care for their wellbeing (Eisenberger et al., 1986) and then feel a sense of obligation to repay the organization by helping it reach its goals (Eisenberger et al., 1990). Research on OST suggests that employees who perceive high levels of organizational support not only have increased employee engagement (Biswas & Bhatnagar, 2013; Saks, 2006; Yadav, 2016; Yongxing et al., 2017), but also have reduced turnover intentions (Eisenberger et al., 2001; Nasrin, 2011; Rhoades et al., 2001; Tuzun & Kalemci, 2011); higher levels of job satisfaction (Eisenberger et al., 1997); improved job performance (Shanock & Eisenberger, 2006; DeConinck & Johnson, 2009; Yongxing et al., 2017); a strengthened feeling of inclusion with and commitment to the organization (Eisenberger et al., 2002); more enthusiasm (Eisenberger & Stinglhamber, 2011); and higher self-reported

work quality (Kuvaas & Dysvik, 2010). Studies have also suggested that employees who perceive high levels of organizational support occasionally adopt additional roles in the organization, such as helping other employees achieve their goals (Eisenberger et al., 2001; Rhoades et al., 2001; Shanock & Eisenberger, 2006).

OST's theorized positive reciprocity dynamic in which employees who have positive perceptions of their organization's support (Eisenberger et al., 1986) or their supervisor's support (Rhoades et al., 2001) feel an obligation to repay their organization, aligns well with recent research from the GAO. In a study that reviewed the OPM's Federal Employee Viewpoint Survey (FEVS) questions to determine their impact on the EEI, the GAO (2015) concluded that the questions that best predicted engagement scores were those that gauged employees' perceptions of being valued and involved in decisions affecting their work. The study, which reviewed data from 2006 to 2014, controlled for a variety of agency and employee characteristics across 37 agencies and, although some coefficients were statistically significant, the GAO found poor predictive power of engagement as a function of either agency characteristics (*R* squared of .02) or employee characteristics (*R* squared of .17).

OST's positive reciprocity dynamic also aligns with several fundamental theories of human behavior. One is Maslow's (1943) hierarchy of needs model, which states that there are stages to human motivation and that higher-level stages cannot occur until lower level ones are met, including physical needs, safety needs, and social belonging needs. OST also aligns with social exchange theory (Homans 1958), which suggests that employee and leader behavior can influence each other, leading to a relationship where positive input from a leader or an organization can lead to reciprocated positive behavior from employees. Finally, OST aligns with theories of positive psychology (Seligman, 2011), particularly surrounding the importance

of receiving and sharing workplace positivity and the concept of flow (Csíkszentmihályi, 1975) in the workplace, when employees are immersed in a state of work absorption, motivation, and enjoyment (Bakker, 2005).

While the research on OST seems to validate the notion that office environments in which employees have positive perceptions of their organization's support are correlated with increased employee engagement, very few studies directly make the association between the perception of psychological safety itself and employee engagement, as Kahn (1990) proposed. One academic study that directly addressed the relationship between these two constructs in the federal workforce was conducted in the VA in 2013. In this mixed-method study, manager and supervisor activities were reviewed to determine their correlation with engagement as determined by the FEVS. Of the seven hypothesized activities reviewed, the promotion of an environment in which employees felt psychologically safe, including having leaders who were seen as approachable, solicitous of employee input, and taking action on employee suggestions or discussing why suggestions were not applied, had the strongest relationship with engagement ($R = .62, p < .001$), accounting for 38% of the variance in engagement (Bologna et al., 2015). Additionally, a 2008 study by the MSPB of the relationship between supervisor actions and employee engagement found that 87% of engaged employees positively rated their supervisor's management skills, whereas only 13.7% of nonengaged employees did so (pp. 16–17).

Moreover, in this literature review, there were two dissertations that were discovered on ProQuest that directly address this relationship in the federal workforce. Although both dissertations, one quantitative (Zehr, 2017) and one qualitative (Robinson, 2018), found positive relationships between psychological safety and engagement in federal employees, additional

research on this connection in the federal workforce would assist both scholars and practitioners in better understanding this relationship and its effects ultimately on customers.

Customer Satisfaction

Customer satisfaction has variously been defined as the difference between the expectation of consuming a product or service as compared to the experience of actual consumption (McDermott & Emerson, 1991; Oliver, 1993), the “overall customer attitudes towards the service provider” (Levesque & McDougall, 1996), or the pleasure level of product or service consumption (Wu, 2006). While there appears to be no agreed-upon definition of the construct, the definition provided by Levesque and McDougall (1996) of the overall customer attitudes toward the service provider was used in this study for its directness, comprehensiveness, and ease in quantifying.

For the purposes of this study, the term *customer satisfaction* is used to refer to both internal and external customer satisfaction. Internal customers are employees in an organization who receive products or services by employees in the same organization (Gremler et al., 1994). The internal customers in this study were all federal employees working for the GSA. External customers are people or entities external to an organization that receive products or services from the organization, often in exchange for money (Anderson & Zemke, 1998). For the GSA, most external customers are employees of federal, state, or local government agencies or tribal officials procuring or leasing real property or related services, purchasing technology products or services, or using contracting-related services. The external customers in this study were all federal, state, or local government employees or tribal officials who had transacted with the agency for a contracting-related service within the previous 12 months. One distinction between internal and external customers is that internal customers are almost always captive customers,

meaning they often have no alternative to obtaining the product or service they need (Gremler et al., 1994). Because of this dependency, the receiving office has an incentive to maintain strong working relationships with the offices that provide it services; otherwise, receiving offices may fail to meet the needs of their external customers.

While there are certainly distinctions between internal customer and external customer dynamics, most researchers have argued that the concept of customer satisfaction does not differ based on customer type, with customers being those looking to have their needs satisfied (McDermott & Emerson, 1991; Gremler et al., 1994; Hallowell et al., 1996). Similarly, while some marketing researchers have argued that the satisfaction of internal customers may influence the performance of their work and thus have an effect on the satisfaction of external customers (Hallowell et al., 1996; Lewis & Entwistle, 1990; Vilares & Coelho, 2003), this study did not attempt to analyze the effect internal customer satisfaction has on external customer satisfaction.

In the U.S. federal government, there is no guidance on whether or how agencies should measure customer satisfaction, leading to a lack of consistency in the way it is measured by agencies that do. One proxy that can be used to gauge satisfaction with the federal government is the ACSI, a product developed in partnership by CFI Group and University of Michigan Business School that has been used to research customer satisfaction levels for more than 20 years (ACSI, n.d.), including for both private-sector companies and federal and local government agencies (ACSI, 2018c). Data are gathered through interviews with U.S. citizens chosen at random throughout the year. Respondents who recently experienced a federal government service are asked to evaluate their experience, and more than 2,800 interviews were conducted for the 2019 report (ACSI, 2020b). The ACSI product is derived from independent research conducted by the CFI Group, which licenses the ACSI methodology (ACSI, n.d.). While the

product does provide scores for certain federal agencies, its selectivity of departments that citizens are asked about does not allow the product to be a useful tool across the federal government, as satisfaction scores are only captured for 12 federal agencies.

Research on customer satisfaction suggests a relationship with employee engagement. A meta-analysis by Bakker (2017) of “hundreds” of studies showed engagement to be an important predictor of organizational performance, including strong evidence of a relationship with customer satisfaction. Similarly, a meta-analysis by Bailey et al. (2017) of 13 studies found that the majority revealed positive relationships between engagement and outcomes, such as customer loyalty.

A large-scale meta-analysis of 42 studies reviewing roughly 8,000 business units in 38 companies found significant correlations between employee engagement and business unit outcome, such as productivity and customer satisfaction (Harter et al., 2002). Another large-scale study of more than 82,000 business units across 49 industries in 2016 found in an analysis of the effects of employee engagement that the most engaged business units are more successful, including having 10% higher customer loyalty and being 20% more productive (Gallup, 2018). Other studies have found similar relationships, correlating higher levels of employee engagement to more sales (Fillion, 2007), fewer customer complaints (Gallup, 2004), improved customer service (Alagaraja & Shuck, 2015; Fink, 2012; Schiemann, 2006) increased customer satisfaction (Macey et al., 2009; Schneider et al., 2009), and improved customer loyalty (Salanova et al., 2005).

In the federal government sector, research from the VA found statistically significant correlations between employee engagement and customer satisfaction (Partnership for Public Service, 2019a). In a review of Federal Employee Viewpoint Survey (FEVS) data (Partnership

for Public Service, 2019b), the VA found that a 1% increase in employee engagement is correlated with a .5% increase in patient satisfaction and a .25% increase in satisfaction with care providers (Partnership for Public Service, 2019a).

Employee engagement has been linked to many other outcomes as well that could all impact customer satisfaction, including reduced turnover, safety incidents, and inventory loss (Harter et al., 2013); better employee mental health (Demerouti et al., 2001); fewer employee health complaints (Hallberg & Schaufeli, 2006); and improved organizational financial performance (Schneider et al., 2009); and profitability (Harter et al., 2013). In the U.S. federal government, the MSPB (2010) has cited significant positive relationships between agency employee engagement and reduced sick leave and work-related illnesses, fewer complainants, reduced intent to leave their agency, and higher ratings on OMB's Program Assessment Rating Tool, which evaluates the effectiveness of federal programs. The OPM (2015c) has also cited positive relationships between employee engagement and retention, productivity, job satisfaction, commitment, as well as decreased absenteeism.

This study used ESTT to explain the connection between employee behavior, operationalized as employee engagement, and customer satisfaction. In addition to this theory, the notion of a relationship between employee behaviors and customer satisfaction is also supported by several popular frameworks, most notably the service-profit chain and new public management. The existing theory, research evidence, and models all make strong cases for the association between employee engagement and customer satisfaction. However, scant evidence has been discovered in the literature review relating engagement measures from the U.S. federal workforce with customer satisfaction. If OMB continues to charge U.S. federal agencies through the Cross-Agency Priority goal program with strengthening employee engagement as a way to

improve organizational results and customer satisfaction (OMB, 2018b), then more academic research to validate the connection between those two constructs, as well as the antecedents of employee engagement that managers can actually impact, should be supported.

Support for a Mediated Relationship Between Psychological Safety and Customer Satisfaction

Although there is no current academic theory that seeks to explain the existence of a relationship between the concepts of psychological safety and customer satisfaction, an indirect relationship can be inferred given the existing theories and extant research connecting psychological safety with employee engagement and employee engagement with customer satisfaction. This implicit, indirect relationship between psychological safety and customer satisfaction through the proposed mediating variable of employee engagement is supportable given the findings from extant research on the antecedents of customer satisfaction as well as the outcomes of psychological safety.

Regarding the antecedents of customer satisfaction, a main challenge suggested by scholars in understanding these antecedents is the vast differentiation of markets, including products versus services, low-involvement versus high-involvement interactions, and new markets versus established markets (Patterson et al., 1997). As such, a large number of statistically significant antecedents of customer satisfaction have been discovered, including product or service quality (Olsen, 2002), perceived fairness of price (Bolton & Lemon, 1999; Homburg et al., 2005), perceptions of product or service performance (Churchill & Surprenaut, 1982), prior experience with the organization (Johnson et al., 2006; Rust et al., 1999), corporate social responsibility (Luo & Bhattacharya, 2006), distributive justice, interpersonal interactions (Orsingher et al., 2010), and employee engagement (Macey et al., 2009; Schneider et al., 2009;

Partnership for Public Service, 2019a). While many of these tested antecedents to customer satisfaction cannot be directly influenced by organizations, including customer orientation toward price, performance, or distributive justice and prior customer experience, there are tested antecedents that can be influenced by organizations, including product or service quality, corporate social responsibility, and interpersonal interactions, including the engagement level of employees. Of these influenceable antecedents, actions to increase the perception of corporate social responsibility arguably fall outside of the authority of government agencies. Additionally, while it is reasonable for all federal agencies to assess and strive to improve the quality of the products or services they provide to their customers, the variety of government-provided products and services limits the ability of the federal government to establish an authoritative mechanism by which to measure product and service quality. As such, while scholars have suggested and tested many antecedents to customer satisfaction, this study recommends the antecedent of employee engagement given its ability to be influenced by federal managers and authoritatively measured by the OPM.

Similarly, many outcomes of psychological safety have been suggested and tested, including organizational commitment (Chen et al., 2014; De Clercq & Rius, 2007; Rathert et al., 2009), teamwork orientation (Ruiz Ulloa & Adams, 2004), team learning and performance (Edmondson, 1999), orientation toward initiative (Baer & Frese, 2003), and employee engagement (Albrecht, 2010; Bailey et al., 2017; Dollard & Bakker, 2010; Kark & Carmeli, 2009; Maximo et al., 2019; May et al., 2004; Nembhard & Edmondson, 2006). All of these suggested outcomes of psychological safety have importance for the federal government. However the suggested outcome of employee engagement, as proposed by Kahn (1990), is of particular interest given the engagement performance goals set by the OMB (2014, 2018b) as

well as the research linking employee engagement to customer satisfaction (Macey et al., 2009; Partnership for Public Service, 2019a; Schneider et al., 2009), which OMB (2018b) has also charged agencies with improving. Therefore, despite the lack of academic theory directly indicating the existence of a relationship between the concepts of psychological safety and customer satisfaction, this study proposed and tested an indirect relationship between these two concepts as mediated by the concept of employee engagement.

Study Hypotheses

This study examined the relationship between psychological safety and customer satisfaction in a large federal government agency through the proposed mediator variable of employee engagement. Based on the extant research on this topic and the operationalization of constructs, this study proposed four major hypotheses and six subhypotheses, which are as follows:

H1: Psychological safety is positively correlated to employee engagement. This hypothesis was explored by observing the results of two subhypotheses:

H1A: Psychological safety is positively correlated to employee engagement using a standard index to gauge the perception of psychological safety.

H1B: Psychological safety is positively correlated to employee engagement using an alternate index to gauge the perception of psychological safety.

H2: Employee engagement is positively correlated to customer satisfaction.

H3: Psychological safety is positively correlated to customer satisfaction. This hypothesis was explored by observing the results of two subhypotheses:

H3A: Psychological safety is positively correlated to customer satisfaction using a standard index to gauge the perception of psychological safety.

H3B: Psychological safety is positively correlated to customer satisfaction using an alternate index to gauge the perception of psychological safety.

H4: Employee engagement partially mediates the relationship between psychological safety and customer satisfaction. This hypothesis was explored by observing the results of two subhypotheses:

H4A: Employee engagement partially mediates the relationship between psychological safety and customer satisfaction using a standard index to gauge the perception of psychological safety.

H4B: Employee engagement partially mediates the relationship between psychological safety and customer satisfaction using an alternate index to gauge the perception of psychological safety.

Key Definitions

The construct of psychological safety has been operationalized at the office level by gauging employee knowledge sharing to discern its impact as a driver of office learning behaviors (Wittenbaum & Stasser, 1996). The construct has also been operationalized at the team level (Edmondson, 1999) by gauging the belief that a team is safe for interpersonal risk taking. Finally, the construct has been operationalized at the dyadic level by gauging the perception of safety of employees who attempt to communicate knowledge to a coworker to better understand knowledge-sharing behavior (Siemsen et al., 2009). However, according to Edmondson (2004), further work is needed to continue to develop and operationalize the construct of psychological safety. As such, this study defines the construct using the original definition provided by Kahn (1990): “Feeling able to show and employ one’s self without fear of negative consequences to self-image, status, or career” (p. 708). The construct was operationalized through a modified

seven-question index using the responses to closed-ended questions in the OPM's FEVS for 10 offices in one federal agency, the GSA. Of those seven questions, Question 17 on the survey aligns most directly with the perception of the team or office as a safe place to share ideas without fear of retribution and was recommended by the OPM as the top question to consider analyzing to gauge the construct of psychological safety (R. Miller, personal communication, May 15, 2020). Therefore, this single question was used as an alternate index to gauge the perception of psychological safety. The index created from the seven questions is referred to as the standard index.

The construct of employee engagement has been operationalized as the amount of time spent or persistence toward a task to gauge the level of discretionary effort (Rothbard & Edwards, 2003) and alternatively as the level of efficiency and effectiveness toward task completion rather than time spent (Brown, 1996). The most used operationalization of the construct, however, is from Schaufeli and Bakker (2004, p. 295), who popularized three measurable components that make up employee engagement: vigor or the energy and resilience in advancing one's work, dedication or the motivation one experiences while working, and absorption or the level of concentration one spends happily engrossed in their work.

This study used the definition provided by the OPM, given that the employee engagement data used in this study comes from the FEVS, which is administered by the OPM. The OPM (2015b) defined employee engagement as "the employee's sense of purpose that is evident in their display of dedication, persistence, and effort in their work or overall attachment to their organization and its mission" (p. 1). The construct was operationalized through an existing index using the responses to closed-ended questions in the OPM's FEVS for 10 offices in the U.S. GSA.

The construct of customer satisfaction has been operationalized differently depending on various factors, including the product or service provided to the customer (Suchánek, & Králová, 2018), the preexisting familiarity of the customer (McDermott & Emerson, 1991; Oliver, 1993) with the product or service, and the industry in which the product or service is being provided (Bitner, 1990; Bitner et al., 1990). The construct is often measured as a psychological process (Oliver, 1997), as repeat behaviors (Backman, 1988), or as an overall feeling (Crompton & Love, 1995; Tomas et al., 2002).

This study uses the definition for customer satisfaction provided by Levesque and McDougall (1996): the “overall customer attitudes towards the service provider.” This definition’s directness and comprehensiveness make it particularly apt for this study, especially as compared to the definition proffered by McDermott and Emerson (1991) or Oliver (1993), which would require the preconsumption measurement of customer expectations or the definition proffered by Wu (2006), which would require an additional definition of the word *pleasure*.

Data collection for the construct of customer satisfaction was conducted using two existing survey instruments used by the GSA: one for internal customers and one for external customers. The measure for internal customers was derived using response data from an annual survey known as the Internal Partner Satisfaction Survey (IPSS), which is only administered in the agency regarding the services provided by back-office functions, such as the agency’s human resource office, communication office, or legal office. Specifically, the collected IPSS responses gauge customer perception of the performance of an office in serving customer business needs. The measure for external customers was derived using response data from an annual Customer Loyalty Survey (CLS), which is administered to individuals in federal, state, and local government agencies as well as tribal officials who have transacted with the agency in the

previous 12 months on acquisition-related programs and services provided by the agency. Specifically, the collected CLS responses gauge the respondents' stated levels of satisfaction from the programs and services used.

The extant research on the variables analyzed in this mediation analysis shows a rich understanding of the antecedents and effects of study variables as well as the academic theories and nonacademic frameworks that connect them. Yet the proposed connections among them have not been well researched, particularly in the federal workforce, where very little literature exploring these hypothesized relationships currently exists. This understanding of the extant research and the gaps in it lead to a better recognition of the rationale for this study and its methodology to analyze the proposed mediated relationship.

Summary

This chapter explores the main elements of this mediation analysis and how each element is supported by theory. The primary elements explored are the relationship between psychological safety and employee engagement and between employee engagement and customer satisfaction. The chapter then reports on the extant research on these connections and rationalized support for a hypothesized mediated relationship between psychological safety and customer satisfaction through employee engagement. The research indicated an implied mediating role of employee engagement on the relationship between psychological safety and customer satisfaction. The research also indicated that the directionality of the correlations among the three variables would be positive and that the degree of correlation among the variables would be low to moderate and positive according to the correlation classification scale created by Pett et al. (2003, p. 60), which provides this correlation classification: Weak = 0.00 to

0.29; Low = 0.30 to 0.49; Moderate = 0.50 to 0.69; Strong = 0.70 to 0.89; Very Strong = 0.90 to 1.

Additionally, although research on the antecedents and effects of employee engagement was rich, the connection between those antecedents and effects has not been well researched, particularly in the federal workforce, where very little literature exploring this hypothesized connection currently exists. The chapter then lists the hypotheses of this study and defines and operationalizes the study's key terms.

Chapter III

Methodology

Research Approach

This quantitative research study proposes and tests a hypothesized relationship in the U.S. GSA (GSA), a large federal government agency, between the variables of psychological safety and customer satisfaction as mediated by employee engagement. GSA was chosen out of the 80 agencies that take part in the FEVS because it is in the top 20 largest federal agencies surveyed (OPM, n.d.), it has a consistently high response rate, never dipping below the fourth highest response rate out of the top 20 federal agencies in the last 5 years (OPM, 2015a, 2016a, 2017, 2018a, 2019a), and has a fee-based cost reimbursement model, which compels it to focus on customer satisfaction as a way of gaining and maintaining revenue. Additionally, the agency has conducted a customer loyalty survey since 2011 (GSA, 2012), has managed an internal partner satisfaction survey since 2013 (Office of Government Ethics, 2018), and has written that it “understands the strong link between ‘engaged’ or motivated employees and organizational success” (GSA, n.d.b). Other fee-based cost-reimbursable agencies or subagencies were considered as well, including the U.S. Patent and Trademark Office, the Federal Highway Administration, and the Consumer Financial Protection Bureau; however, none were found to have 5 or more years of recent annual customer satisfaction surveys. As such, data from GSA were the only data analyzed in this study.

The relationships between the variables were analyzed using data from three survey instruments, which are all issued annually by the federal government in the spring. The study retrospectively analyzed data results from the years 2013–2019. These years were chosen because they cover the time all three surveys used in this study have been conducted annually. The 2020 FEVS was delayed because of the COVID-19 pandemic and has undergone significant changes to the number, numbering, and groupings of its questions and indices (Wagner, 2020). Including 2020 data in this study would have required waiting for the results to be published and then making significant adjustments to the statistical analysis of the 2020 FEVS data. For this reason, the years of this study’s data analysis only goes to 2019.

Specifically, 10 offices in the federal agency were studied, ranging from about 40 to 300 employees each. Six of these offices manage programs that are used directly by external customers, with each office leading one of six acquisition-related portfolios in the agency. The four remaining offices perform administrative services for the agency, including the agency’s communication office, legal office, contracting and administrative support office, and small business utilization office, which advocates for the use of small and disadvantaged businesses when making contracting decisions. Because these offices provide back-office services, their customers are considered internal to the agency.

Finally, this study was determined by the Valdosta State University Institutional Review Board (IRB) to be exempt from IRB oversight (Appendix A). The researcher has completed all required certification courses to conduct this research (Appendix B).

Federal Employee Viewpoint Survey

The FEVS is one of the three survey instruments used. It captures both psychological safety and employee engagement scores for each of the 10 offices. It is a 98-item, voluntary,

anonymous, annual, Web-based instrument, taken individually by permanent, nonseasonal federal employees throughout 80 agencies. The survey uses a five-point scale for each question, ranging from Strongly Agree / Very Good / Very Satisfied to Strongly Disagree / Very Poor / Very Dissatisfied.

To send out the survey, the OPM collects federal employee email addresses from each agency, sorted by office, and sends personalized survey links directly to employees, who may use official time to respond to the questions. The 5-year average participation rate for the agency is 69.2% (OPM, n.d.). The collected information is then deidentified and put into agency- and office-level summary reports that are then sent back to the respective agencies and offices for their review and action.

In the summary reports, the responses for each question are summarized into three categories: Positive (e.g., Strongly Agree and Agree), Neutral (e.g., Neither Agree nor Disagree), and Negative (e.g., Disagree or Strongly Disagree). For this study, which uses the FEVS for the constructs of both psychological safety and employee engagement, the percentage of each office's "Positive" responses is used to gauge office-level agreement with the questions. This is done for each of the 10 offices.

Psychological Safety Scores

The perception of psychological safety is hypothesized in H1, H1a, and H1b of this study to be positively correlated to employee engagement. It is also hypothesized in H3, H3a, and H3b of this study to be positively correlated to customer satisfaction and in H4, H4a, and H4b of this study to be mediated in its relationship to customer satisfaction by employee engagement. Psychological safety was measured in two ways. The first way is through a modified, additive index that takes the mean of an office's respondents' scores on seven existing Likert-type

questions in the FEVS and averages them together to calculate the mean for the office for a particular year. This process was done for each of the 10 offices for each year studied (2013–2019) where the data are available. Of the 10 offices, the psychological safety scores from the six smallest were derived directly. The other four offices are large and their annual scores were derived by taking a mean of scores from several, smaller customer-facing suboffices in those offices. This was done to avoid using scores from parts of larger offices that do not interact with customers.

The seven Likert-type questions in this standard index were chosen based on their similarity to questions provided in four other questionnaires designed to gauge employees' perception of psychological safety present in their office (Edmondson, 2018). The four questionnaires are listed below along with their Cronbach's Alpha values, a level of internal reliability where any score above 0.70 is considered reliable (Nunnally & Bernstein, 1994):

A seven-question survey with a Cronbach Alpha of 0.82 (Edmondson, 2018, p. 215) proposed by Edmondson (1999) and used by Google consists of the following items:

1. If you make a mistake in this team, it is often held against you.
2. Members of this team are able to bring up problems and tough issues.
3. People on this team sometimes reject others for being different.
4. It is safe to take a risk in this team.
5. It is difficult to ask other members of this team for help.
6. No one on this team would deliberately act in a way that undermines my efforts.
7. Working with members of this team, my unique skills and talents are valued and utilized. ("Tool," 2016)

A five-question survey with a Cronbach's Alpha of 0.94 (Edmondson, 2018, p. 213) proposed by Garvin et al. (2008), consists of the following items:

1. In this unit, it is easy to speak up about what is on your mind.
2. If you make a mistake in this unit, it is often held against you.
3. People in this unit are usually comfortable talking about problems and disagreements.
4. People in this unit are eager to share information about what doesn't work as well as to share information about what does work.
5. Keeping your cards close to your chest is the best way to get ahead in this unit.

A three-question survey with a Cronbach's Alpha of 0.74 (Edmondson, 2018, p. 214) proposed by Tucker et al. (2007) consists of the following items:

1. People in this unit are comfortable checking with each other if they have questions about the right way to do something.
2. The people in our unit value others' unique skills and talents.
3. Members of this NICU are able to bring up problems and tough issues.

A four-question survey with a Cronbach's Alpha of 0.73 (Edmondson, 2018, p. 214) proposed by Nembhard and Edmondson (2006) consists of the following items:

1. People in this unit are comfortable checking with each other if they have questions about the right way to do something.
2. Members of this NICU are able to bring up problems and tough issues.
3. If you make a mistake in this unit, it is often held against you.
4. It is easy to ask other members of this unit for help.

A review of each of these four questionnaires suggests three main concepts that each aims to capture: (a). The perception of the team or office being a safe place to share ideas

without fear of retribution, (b) the perception that the team or office allows risk taking, and (c) the perception that one's full participation is valued and encouraged. These three concepts appear as well in other questionnaires designed to gauge their perception of psychological safety, including a popular survey designed by (May et al., 2004) that asks respondents their level of agreement to these exact concepts via the following three Likert-type statements:

1. There is a threatening environment at work
2. I am afraid to express my opinions at work
3. I'm not afraid to be myself at work.

According to the MSPB, there is no annual survey in the federal government that seeks to directly measure the perception of psychological safety (S. Roth, personal communication, May 27, 2020). Additionally, the OPM has not created an index in the FEVS to gauge the perception of psychological safety (R. Miller, personal communication, May 15, 2020) As such, this study established a new index in the FEVS to directly measure the perception of psychological safety. This new index was created by reviewing existing items in the FEVS to find questions that best match the three aforementioned concepts. Care was taken to ensure no questions would be used to gauge the perception of psychological safety in the development of the OPM's EEI. In the end, seven existing FEVS questions were found that aligned well with the three concepts and were used in this study to gauge the perception of psychological safety. Of the seven questions, Questions 17 and 37 on the FEVS align with the perception of the team or office being a safe place to share ideas without fear of retribution; Questions 30 and 43 align with the perception that the team or office allows risk taking; and Questions 1, 46, and 63 align with the perception that one's full participation is valued and encouraged. These questions along with their corresponding question number in the FEVS are as follows:

1. I am given a real opportunity to improve my skills in my organization.
17. I can disclose a suspected violation of any law, rule or regulation without fear of reprisal.
30. Employees have a feeling of personal empowerment with respect to work processes.
37. Arbitrary action, personal favoritism and coercion for partisan political purposes are not tolerated.
43. My supervisor/team leader provides me with opportunities to demonstrate my leadership skills.
46. My supervisor provides me with constructive suggestions to improve my job performance.
63. How satisfied are you with your involvement in decisions that affect your work?

The second way psychological safety was measured was through a single-question index using Question 17 on the Federal Employee Viewpoint Survey. As with the standard index, the scores for this alternative, one-question index were derived through an additive index that takes averages an office's respondents' scores on one existing Likert-type question in the FEVS to calculate the mean for the office for a particular year. This process was done for each of the 10 offices for each year studied (2013–2019) where the data are available.

Question 17 aligns most directly with the perception of the team or office being a safe place to share ideas without fear of retribution and is the question most closely aligned with the definition of psychological safety used by Kahn (1990), which is the definition operationalized in this study. Question 17 was recommended by the OPM as the top question to consider when analyzing the construct of psychological safety (R. Miller, personal communication, May 15, 2020). Because of the potential benefit to researchers and practitioners to be able to use an

office's or an agency's response to a single question to predict the level of employee engagement or customer satisfaction, the mean of individual employee responses at the office-level to Question 17 was used as an alternate index to gauge the construct of psychological safety.

To gauge the internal consistency, the Cronbach Alpha value was calculated for the seven-question standard index, revealing a value of 0.94. The Cronbach Alpha value was not able to be calculated for the single-item alternate index, as individual items cannot have internal consistency.

Employee Engagement Scores

Employee engagement was hypothesized in H2 of this study to be positively correlated to customer satisfaction and in H4 to partially mediate the effect on the relationship between psychological safety and customer satisfaction. The employee engagement scores for this study were derived using the FEVS. As with the psychological safety scores, the employee engagement scores were derived by taking the mean of scores on several existing Likert-type questions in the FEVS for each of the 10 offices for each year studied (2013–2019) where the data were available. Again, the scores from the six smallest offices were derived directly and the scores from the four largest offices were derived by taking the mean of scores from their customer-facing suboffices. Unlike the psychological safety scores, however, the employee engagement scores were taken from an existing index in the FEVS. This index, called the EEI, was developed in 2010 (OPM, 2016b) in part to fulfill federal modernization assessments requirements related to agency performance as part of the Government Performance and Results Act (Federal Service Labor-Management Relations Act, 2003).

The EEI averages the responses to 15 Likert-type questions in the FEVS. These questions form an index to measure the conditions that lead to employee engagement (OPM, 2015b).

However, Byrne et al. (2017), which validated the notion that the EEI was developed to evaluate workplace conditions that lead to engagement and is not a measure of engagement itself, found in a study of the 2014 FEVS that the EEI was a significant and strong predictor of engagement, particularly the Intrinsic Work Experience subindex. This conclusion was supported by the GAO (2015), which agreed that the FEVS was not designed explicitly to measure engagement but stated that its design and implementation were sufficient to analyze the construct, finding that the 15 EEI questions had strong internal cohesion (p. 57). These findings corroborate not only the EEI's strength in predicting engagement, but also that intrinsic work experiences that might be fostered through a supportive office environment, such as feelings of encouragement, empowerment, or fit, are particularly strong at predicting engagement.

The 15-question EEI displayed acceptable levels of internal reliability, with a Comparative Fit Index of 0.969 (OPM, 2016c), which is above the value of .95 accepted as an indicator of good fit (Hu & Bentler, 1999). The annual EEI value for each office was derived by taking the mean of an office's respondents' scores on the 15 existing Likert-type questions and averaging them together to calculate the office mean for a particular year. This additive index process is used by OPM to calculate office- and agency-level employee engagement scores in their reports and is the same process used to create psychological safety and customer satisfaction scores in this study.

These 15 questions are separated into three subindices, which were intended to reflect different aspects of engaging work environments (OPM, 2016b). The questions and subindices are as follows, listed by the question number in the survey:

Leaders Lead

- 53. In my organization, senior leaders generate high levels of motivation and commitment in the workforce.
- 54. My organization's leaders maintain high standards of honesty and integrity.
- 56. Managers communicate the goals and priorities of the organization.
- 60. Overall, how good a job do you feel is being done by the manager directly above your immediate supervisor?
- 61. I have a high level of respect for my organization's senior leaders.

Supervisors

- 47. Supervisors in my work unit support employee development.
- 48. My supervisor listens to what I have to say.
- 49. My supervisor treats me with respect.
- 51. I have trust and confidence in my supervisor.
- 52. Overall, how good a job do you feel is being done by your immediate supervisor?

Intrinsic Work Experience

- 3. I feel encouraged to come up with new and better ways of doing things.
- 4. My work gives me a feeling of personal accomplishment.
- 6. I know what is expected of me on the job.
- 11. My talents are used well in the workplace.
- 12. I know how my work relates to the agency's goals and priorities.

Customer Loyalty Survey

Two other survey instruments were used to measure customer satisfaction. Customer Satisfaction was hypothesized in H2 of this study to be positively correlated to employee

engagement and in H3 of this study to be positively correlated to psychological safety. H4 of this study hypothesizes that the relationship between psychological safety and customer satisfaction is mediating by employee engagement.

The first of these two survey instruments is the CLS, which GSA administers to federal, state, and local government employees that use its acquisition-related programs and services. Of the 10 offices to be studied, the CLS was used to gauge customer satisfaction in the agency's six main acquisition portfolios, which interact directly with external customers. Specifically, the CLS was used to gauge the perception of customer satisfaction, which was measured through questions in the CLS that directly asks respondents about their level of satisfaction.

The 17-item CLS is a voluntary, anonymous, annual, Web-based instrument taken individually by active customers or federal, state, local, or tribal customers who have transacted with the agency for a contracting-related service within the previous 12 months. About 25–30 customer agencies are represented in the survey, with an average of roughly 7,000 respondents annually over the last seven years, making for an estimate of about 200 to 250 responses per agency asked to provide input. The average annual response rate of the survey during the last seven years is 16%, making for an average of about 1,100 responses per office per year. Survey respondents are only asked about the programs and services they used, as not all respondents use all six portfolio's programs and services.

The survey gathers information on five key performance indicators used to gauge the perception of the portfolio's activities: customer service, technology, ease of acquiring, value, and quality. The survey also gathers information on two key performance indicators used to gauge customer sentiment: customer satisfaction and customer loyalty (GSA, 2013). Scores are

derived by taking the mean of customer responses for each office. No reliability tests have been conducted on the CLS.

For the six offices whose customer satisfaction scores were derived using the CLS, the scores were taken directly from the mean of customer responses for each year studied (2013–2019) where data were available. This additive index approach to calculate the mean for an office for a particular year is the same one used to derive all other variable scores used in this study. This process was done for each of the 10 offices for each year studied (2013–2019) where the data are available

The measure of satisfaction for the years 2013 and 2014 was a composite of three questions asking the respondent to rate their level of satisfaction in the individual providing service, the process to receive the service, and the service itself. In 2015, the agency began asking one question on the overall level of satisfaction of the service received. The survey uses a Likert-type scale, and in 2016 the scale changed from a 5-point scale to a 10-point scale. This study rescaled all the CLS data into a 10-point scale. This was done by rescaling each response to its corresponding average on the 10-point scale, where 1 = 1.5; 2 = 3.5; 3 = 5.5; 4 = 7.5; and 5 = 9.5.

The question used in this study to gauge external customer satisfaction, asked directly in the CLS since 2015, is the following:

- Please consider all of your experiences interacting with [Office/Program] in the last 12 months. How satisfied or dissatisfied are you with this program?

Currently, questions in the CLS ask customers about services provided by 18 agency offices. However, to be able to gather data going back to 2013, only scores from the agency's six main acquisition portfolios were used in this study, as the scores for these offices are largely

available throughout the time period selected. Both office-level and customer agency-level summaries are provided to offices as feedback. This study reviewed only office-level scores.

Internal Partner Satisfaction Survey

The second customer satisfaction survey is the IPSS, which the agency administers internally for all back-office functions. The six-item IPSS is a voluntary, anonymous, annual, Web-based instrument, taken individually by agency employees regarding the support they receive from the agency's back-office functions. It is intended to provide each participating administrative office their internal customers' overall perception of the value of the services received in the past 12 months. Scores are derived by taking the mean of customer responses for each office. This additive index approach to calculate the mean for an office for a particular year is the same one used to derive all other variable scores used in this study. This process was done for each of the 10 offices for each year studied (2013–2019) where the data are available

Names of survey recipients are provided by each participating office based on the customers who received their services in the past year. Customers may also “opt-in” and provide feedback for offices that did not directly list them as customers. Eight to 10 agency offices participate in the survey annually. However, to enable data gathering going back to 2013, only scores from four offices were used in this study, as the scores for these offices are largely available throughout the time period selected. The other offices that were not considered for this study either did not participate for multiple years or underwent a consolidation or significant office reorganization, which might have significantly altered their employees' perception of psychological safety, their employees' level of engagement, or their customers' perception of satisfaction.

For the four offices whose customer satisfaction scores were derived using the IPSS, the scores were taken directly from the mean of customer responses for each year studied (2013–2019) where data were available. A 7-year average for the four administrative offices reviewed in this study show that the survey is sent to an average of 414 individuals per office, with an average annual response rate of 34%, making for about 140 responses per office per year. The size of the four administrative offices surveyed range from 60 to 300 employees between the years 2013–2019. The IPSS does not directly ask about customer satisfaction but instead asks customers to rate the expertise, timeliness, value, and overall performance of the staff in serving the customer’s needs. As such, the question used to gauge satisfaction in this study was the following Likert-type question using a 5-point scale:

- 2. Overall, how would you rate the performance of [Office] in serving your business needs?

The following response scale was used for the question: 1 = Unacceptable; 2 = Needs Improvement; 3 = Meets Expectations; 4 = Exceeds Expectations; 5 = Exceptional. The 5-point scale was rescaled to a 10-point scale using the same method as employed to rescale the responses to the CLS.

Operationalization of Variables

Table 1

Variable Definitions and Data Collection and Analysis Methods

Variable	Definition	Operationalization
Predictor variable: Psychological safety	“Feeling able to show and employ one’s self without fear of negative consequences to self-image, status, or career” (Kahn, 1990, p. 708)	The mean of individual employee responses summarized at the office-level to the following seven closed-ended questions in the OPM’s Federal Employee Viewpoint Survey (listed by question number): <ul style="list-style-type: none"> • 1. I am given a real opportunity to improve my skills in my organization. • 17. I can disclose a suspected violation of any law, rule or regulation without fear of reprisal.

		<ul style="list-style-type: none"> ● 30. Employees have a feeling of personal empowerment with respect to work processes. ● 37. Arbitrary action, personal favoritism and coercion for partisan political purposes are not tolerated. ● 43. My supervisor/team leader provides me with opportunities to demonstrate my leadership skills. ● 46. My supervisor provides me with constructive suggestions to improve my job performance. ● 63. How satisfied are you with your involvement in decisions that affect your work? <p>Alternate index: The mean of individual employee responses at the office-level to the following single closed-ended question in the OPM’s Federal Employee Viewpoint Survey (listed by question number):</p> <ul style="list-style-type: none"> ● 17. I can disclose a suspected violation of any law, rule or regulation without fear of reprisal.
<p>Mediating variable: Employee engagement</p>	<p>“The employee’s sense of purpose that is evident in their display of dedication, persistence, and effort in their work or overall attachment to their organization and its mission” (OPM, 2015b, p. 1).</p>	<p>The mean of individual employee responses summarized at the office-level to the following, existing 15-question index in the OPM’s Federal Employee Viewpoint Survey consisting of three subindices (listed by question number):</p> <p>Leaders Lead</p> <ul style="list-style-type: none"> ● 53. In my organization, senior leaders generate high levels of motivation and commitment in the workforce. ● 54. My organization’s leaders maintain high standards of honesty and integrity. ● 56. Managers communicate the goals and priorities of the organization. ● 60. Overall, how good a job do you feel is being done by the manager directly above your immediate supervisor? ● 61. I have a high level of respect for my organization’s senior leaders. <p>Supervisors</p> <ul style="list-style-type: none"> ● 47. Supervisors in my work unit support employee development. ● 48. My supervisor listens to what I have to say. ● 49. My supervisor treats me with respect. ● 51. I have trust and confidence in my supervisor. ● 52. Overall, how good a job do you feel is being done by your immediate supervisor? <p>Intrinsic Work Experience</p> <ul style="list-style-type: none"> ● 3. I feel encouraged to come up with new and better ways of doing things. ● 4. My work gives me a feeling of personal accomplishment. ● 6. I know what is expected of me on the job. ● 11. My talents are used well in the workplace. ● 12. I know how my work relates to the agency’s goals and priorities.

<p>Outcome variable:</p> <p>Customer Satisfaction</p>	<p>The “overall customer attitudes towards the service provider” (Levesque & McDougall, 1996)</p>	<p>Operationalized using two different surveys:</p> <p>GSA Customer Loyalty Survey:</p> <p>For the years 2013–2014: The mean of individual responses to three Customer Loyalty Survey questions that summarized a respondent’s experience with a particular GSA external-facing office or program asking the respondent to rate their level of satisfaction in the individual providing service, the process to receive the service, and the service itself.</p> <p>For 2015-2019: The mean of individual responses to the following Customer Loyalty Survey question that summarized a respondent’s experience with a particular GSA external-facing office or program:</p> <ul style="list-style-type: none"> • “Please consider all of your experiences interacting with [Office/Program] in the last 12 months. How satisfied or dissatisfied are you with this program?” <p>GSA Internal Partner Satisfaction Survey:</p> <p>The mean of individual employee responses summarized at the office-level to the following question in GSA’s Internal Partner Satisfaction Survey (listed by question number):</p> <ul style="list-style-type: none"> • 2. Overall, how would you rate the performance of [Office] in serving your business needs?
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Mediation Analysis

The results for H1 through H4 were achieved through a single mediator model of the mediation analysis estimation method, which provides a statistical assessment of the relationships among variables. Mediation analyses provide a macrolevel perspective of the total, direct, and indirect relationships between variables through the comparison of regression coefficients along a specified model. The coefficients indicate the amount of expected change in one variable as a result of change in another.

In this study, psychological safety was the predictor or independent variable (X), employee engagement was the mediator variable (M), and customer satisfaction was the outcome or dependent variable (Y). All variables are continuous. Five outputs were tested in this analysis: the direct effect of the predictor variable on the mediator variable, the direct effect the mediator

variable on the outcome variable, the direct effect of the predictor variable on the outcome variable, the indirect or mediated effect of the predictor variable on the outcome variable, and the total effect of the predictor variable on the outcome variable. The three direct effects were generated using the ordinary least squares method as performed through the PROCESS procedure (Hayes, 2020) on IBM's SPSS software (26.0) program. These direct effects can be expressed in the following three regression equations, where i_1 , i_2 , and i_3 are intercepts, a represents the coefficient of M regressed on X and Y , b represents the coefficient of Y regressed on M after controlling for X , c represents the coefficient of Y regressed on X , c' represents the coefficient of Y regressed on X after controlling for M , and e represents the error residuals for the variables:

$$M = i_1 + aX + e_1$$

$$Y = i_2 + c'X + bM + e_2$$

$$Y = i_3 + cX + e_3$$

The indirect or mediated effect is the product of the coefficients for Path a and Path b ($a*b$) and the total effect is the summation of the direct and indirect effects ($c'+ab$) (Judd & Kenny, 1981). Figure 2 illustrates the relationships of the variables in the hypothesized model.

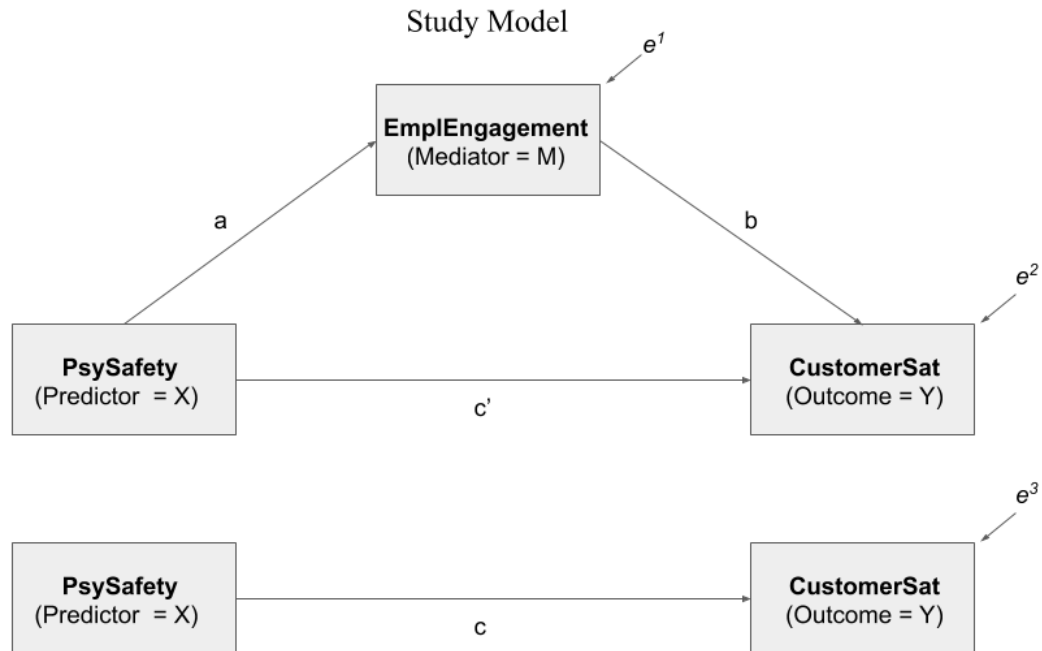


Figure 2. Study model and variables.

Four statistical output values were analyzed for each of the 10 offices studied. These statistical output values are the coefficient of determination (R squared), adjusted R squared, the regression coefficient to represent the rate of change of the dependent variable as a function of changes in the independent variable to determine the slope of the regression line, and the p value to test the hypotheses (Remler & Van Ryzin, 2011). A significance level (α) of 0.05 was used, which is the standard significance level (Remler & Van Ryzin, 2011). Through the PROCESS procedure, bias-corrected bootstrapping of 5,000 resamples were used at the 95% confidence interval to assist with deriving estimates of population statistics. The analysis controlled for the year to eliminate any effect the year has as a confounding variable. Additionally, the analysis used traditional mediation analyses controls when testing for relationships, including to control for employee engagement when testing the direct effect of psychological safety and customer satisfaction and controlling for psychological safety when testing for the direct effect of employee engagement on customer satisfaction.

Limitations

This retrospective research approach has limitations. First, many more variables could be considered as affecting customer satisfaction, including other proposed antecedents to employee engagement and possible other mediating or moderating variables between psychological safety and customer satisfaction. Second, differences in how agencies acquire funding could limit the results' generalizability about federal government customers. Third, because there is no available reliability data on the standard or alternate indices used, there may be concerns related to how well the FEVS questions selected to evaluate the perception of psychological safety can accurately evaluate this condition. Fourth, there are limitations due to the small sample size of only one agency and the short time period studied. Fifth, while the quantitative aspect of this study reveals the mathematical relationship among variables, it did not allow for the level of exploration into the reasons behind the relationships that a qualitative or mixed-method study would. Sixth, while the FEVS EEI has been shown to have acceptable reliability data, neither the CLS nor the IPSS have undergone sufficient testing to determine their reliability data. Seventh, even strong positive correlations do not signify causation. Eighth, engagement may not be a problem in the federal government. Although some researchers have claimed that public-sector employees have lower levels of engagement than private-sector employees (Lavigna, 2018; Partnership for Public Service, 2018), the only academic research able to be found on the topic reveals the opposite, with higher engagement levels in the public sector (Vigoda-Gadot et al., 2013). Ninth, the perception of psychological safety may be influenced by culture (Cauwelier et al., 2016), particularly power distance (Hu et al., 2018), meaning that this study's findings may be limited in their application, especially outside of American or Western cultural norms. Tenth, the perception of psychological safety may also be influenced by time, with shorter-tenured and

longer-tenured teams having higher perceptions of safety than moderately tenured teams (Koopmann et al., 2016). Finally, even if strong positive correlations were discovered, without recommendations for practitioners on how to foster a supportive office environment in which employees feel psychologically safe, the research is limited in its application.

While these limitations exist, the theoretical support for the hypotheses, the adequate available data to test the hypotheses, and the potential usefulness of the results for federal managers facing budget cuts, rising customer expectations, and employee engagement mandates from OMB compel exploration of this topic. Additionally, it is important that this topic be explored for the federal workforce not only because of the lack of research in this sector, but also because of the size of the federal government, where even small increases in employee engagement can have significant impacts.

Contributions to Knowledge

The results of this study may be useful in many ways. First, it adds to the body of knowledge on the relationships between psychological safety and employee engagement, as Kahn (1990) originally posited, as well as the relationships between employee engagement and customer satisfaction and between psychological safety and customer satisfaction. Understanding the impact that the employee experience can have on customers could lead to more research on the types and effects of leadership or human resources training. Second, this study addresses a gap in the literature through its exploration of the presence and strength of a relationship between psychological safety and customer satisfaction, particularly in a government agency. Research on this relationship could either add more certainty to existing findings or question the results of previous studies. Third, determining the existence and strength of these relationships in a public-sector could assist scholars in exploring the comparisons between private-sector and public-

sector work environments. Finally, if the hypotheses of this study were supported, current and future public administrators could rely on these findings to improve their program's customers' satisfaction through efforts to create more supportive office environments where employees feel safe to bring their whole selves to work, ultimately leading to the creation of environments that support both the employee and the customer.

Summary

This chapter explains the study's quantitative approach to review 7 years of data for 10 offices in a large federal agency using three existing surveys that explored both internal and external customers. The chapter explains how the constructs of psychological safety, employee engagement, and customer satisfaction were measured and controlled. The chapter also lists the limitations of this study's approach, including concerns over the variables to be studied, the relatively small sample size, and the potentially limited application of findings.

Chapter IV

Results

This quantitative research study examined, proposed, and tested a hypothesized mediated relationship between the variables of psychological safety and customer satisfaction, as mediated by employee engagement, in the GSA. This chapter reveals the results of this analysis as conducted using the mediation analysis estimation method.

The data for this study were collected from the agency through a Freedom of Information Act request. Of the 10 GSA offices proposed to be studied, only nine had sufficient available data. The office without sufficient data was one of the six acquisition-related portfolios and had been established in late 2015 (GSA, 2015). The only years in the timeframe of this study for which employee and customer data from this office were available was from 2016–2019. This 4-year time period of available data for this office was insufficient for a regression analysis, which requires five observations at a minimum for statistical analyses (Michael et al., 2015). As such, data from only nine of the 10 offices were used.

Collected Data

Survey Demographics

This study used data collected from three surveys from the years 2013–2019. For the FEVS, data from 7,607 survey submissions were used in this study, averaging 1,073 employee submissions per year, or 121 responses for each of the nine offices per year. The response rate averaged 72.1% per year. Table 2 presents the total number of responses from 2013–2019, the

mean of annual responses, and the mean of the annual response rate. Demographic information collected from survey respondents in the nine offices in the 2019 FEVS survey showed that 64% of those employees worked at GSA’s headquarters in Washington, D.C., 77.9% were nonsupervisors, 66% had worked for the federal government for 11 or more years, 63.2% were 40 years of age or older, 50.8% were female, and 21.5% were planning to retire in the next 5 years.

Table 2

Federal Employee Viewpoint Survey Responses and Response Rates Per Office

Office	<i>n</i>	Annual Mean	Mean Response Rate
1	688	98.3	70.2%
2	324	46.3	72.5%
3	546	78.0	70.6%
4	152	25.3	74.4%
5	915	130.1	76.2%
6	1,045	149.3	68.6%
7	1,484	212.0	67.3%
8	431	61.6	80.6%
9	1,914	273.4	68.1%

Note. *n* = Number of observations; Annual Mean = Average number of responses per office per year; Mean Response Rate = The percentage of respondents that completed the survey

The other two surveys from which data were collected were the IPSS and the CLS, both of which measured customer satisfaction. For the IPSS, data from 5,736 survey submissions were used, averaging 819 employee submissions per year, or 229 responses for each of the four offices per year. The response rate averaged 32.1% per year. Demographic information collected

in this survey was not made available. For the CLS, data from 30,166 survey submissions were used, averaging 4,309 submissions per year, or 861 responses for each of the five offices per year. The response rate averaged 21.4% per year. Table 3 presents the total number of responses from 2013–2019, the mean of annual responses, and the mean of the annual response rate.

Demographic information collected in this survey was not made available.

Table 3

Customer Satisfaction Survey Responses and Response Rates Per Office

Office	<i>n</i>	Annual mean	Mean response rate
1	3,399	566.5	35.3%
2	825	117.9	33.7%
3	1,356	193.7	28.0%
4	156	31.2	31.7%
5	788	112.6	24.0%
6	12,893	1841.9	32.2%
7	1,303	186.1	9.0%
8	975	139.3	22.1%
9	14,207	2029.6	19.0%

Note. *n* = Number of observations; Annual Mean = Average number of responses per office per year; Mean Response Rate = The percentage of respondents that completed the survey

Survey Results Analysis

Overall, the scores for all three variables increased through the years, with psychological safety scores increasing 17.4% from 2013 to 2019 using the standard index and 5.5% using the alternate index, employee engagement scores increasing 12.9% during the time period, and customer satisfaction scores increasing 10.9% during the time period. The mean psychological safety score for all years using the standard index was .669, with a variance of 20.6% and a

standard deviation of .098. The mean psychological safety score for all years using the alternate index was .697, with a variance of 14.8% and a standard deviation of .117. The mean employee engagement score was .722, with a variance of 14.6% and a standard deviation of .048. The mean customer satisfaction score was 7.07, with a variance of 10.9% and a standard deviation of .292. Table 4 presents the means and standard deviations for these two indices.

Table 4

Descriptive Statistics for the Study Variables

	Standard Index			Alternative Index		
	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>	<i>n</i>
Psychological safety	.669	.098	62	.697	.117	62
Employee engagement	.722	.048	62	-	-	-
Customer satisfaction	7.07	.292	60	-	-	-

Note. *n* = number of observations

To determine if there was a practical difference between the standard index and the alternate index, a paired sample two-tailed *t* test was conducted, revealing a Cohen’s *d* effect size of *d* = .261. Effect size allows for a comparison of magnitudes from different variables by standardizing the means of each in terms of their standard deviation units (Remler & Van Ryzin, 2011). Cohen’s *d* is one of the most commonly used statistics to test for effect size, with values of .2 considered small, values of .5 considered medium, values of .8 considered large (Remler & Van Ryzin, 2011). Table 5 presents the means and standard deviations for these two indices as well as the results of the effect size test.

Table 5

Two-Tailed Paired Sample t Test for the Difference Between the Standard Index and the Alternate Index

	Standard Index		Alternative Index		<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
	Mean	<i>SD</i>	Mean	<i>SD</i>				
Psychological safety	.669	.098	.697	.117	-3.302	61	.002	.261

Note. *t* = *t* score; *df* = degrees of freedom; *p* = *p* value; *d* = Cohen's *d*

Descriptive Data

This study proposed four major hypotheses and six subhypotheses that were tested using the mediation analysis estimation method. Hypothesis 1 states that psychological safety is positively correlated to employee engagement. This was explored by observing the results of two subhypotheses: H1a, which gauged the perception of psychological safety using a standard index, and H1b, which gauged the perception of psychological safety using an alternate index. Hypothesis 2 states that employee engagement is positively correlated to customer satisfaction. Hypothesis 3 states that psychological safety is positively correlated to customer satisfaction. This was explored by observing the results of two subhypotheses, H3a, which gauged the perception of psychological safety using a standard index and H3b, which gauged the perception of psychological safety using an alternate index. Finally, Hypothesis 4 states that employee engagement partially mediates the relationship between psychological safety and customer satisfaction. This hypothesis was explored by observing the results of two subhypotheses: H4a, which gauged the perception of psychological safety using a standard index, and H4b, which gauged the perception of psychological safety using an alternate index.

Results Summary

The subhypotheses were tested using two indices, a standard index and an alternate index, which used only the results from Question 17 of the Federal Employee Viewpoint Survey. The SPSS macro PROCESS v3.5 (Model 4) was used to test for results, including the use in SPSS of 5,000 nonparametric bootstrap samples for bias correction at the 95% confidence intervals. The analyses yielded mixed results. All hypotheses were supported when the predictor variable (psychological safety) was measured using the alternate index. However, when the predictor variable was measured using the standard index, the results were abnormal, indicating the existence of multicollinearity. As such, although the results using the proposed regression model that uses the standard index are displayed below, this model is not statistically valid because of the existence of multicollinearity (Marquardt, 1970).

Hypothesis 1. Hypothesis 1 proposed a response to Research Question 1, which asked the following question: “To what extent does employee perception of psychological safety impact employee engagement?” For Hypothesis 1, as tested by H1a, after statistically controlling for year, the standard index revealed that the relationship between the predictor variable (psychological safety) and the proposed mediator variable (employee engagement) was strong ($n = 61$, $\beta = .930$, $R \text{ squared} = .868$, adjusted $R \text{ squared} = .861$) and statistically significant ($p < .001$). This direct effect indicates that a 1% rise in psychological safety as determined by the standard index is correlated with a .930% rise in employee engagement. The relationship also indicates that 86.8% of the variance of the dependent variable in this sample can be explained by the independent variable and that 86.1% of the variance of the dependent variable in the entire population could be explained by the independent variable (Hair et al., 2010).

For Hypothesis 1, as tested by H1b, after statistically controlling for year, the alternate index to gauge the perception of psychological safety revealed that the relationship between the predictor variable (psychological safety) and the proposed mediator variable (employee engagement) was low ($n = 61$, $\beta = .488$, R squared = .238, adjusted R squared = .199) and statistically significant ($p < .001$). This direct effect indicates that a 1% rise in psychological safety as determined by the alternate index is correlated with a .488% rise in employee engagement.

Hypothesis 2. Hypothesis 2 proposed a response to Research Question 2, which asked the following question: “To what extent does employee engagement impact customer satisfaction?” For Hypothesis 2, two results were generated to gauge the relationship between the proposed mediator variable (employee engagement) and the outcome variable (customer satisfaction): the first result controlled for the effect of the predictor variable (psychological safety) as measured using the standard index on the outcome variable (customer satisfaction), and found a weak, negative, and not statistically significant relationship ($n = 60$, $\beta = -.190$, R squared = .036, adjusted R squared = -.016, $p = 0.322$); the second result controlled for the effect of the predictor variable (psychological safety) as measured using the alternate index on the outcome variable (customer satisfaction), and found a moderate and statistically significant ($n = 60$, $\beta = .555$, R squared = .308, adjusted R squared = .272, $p < 0.001$). This direct effect indicates that a 1% rise in employee engagement is correlated with a .555% increase in customer satisfaction. Both results statistically controlled for year.

Hypothesis 3. Hypothesis 3 proposed a response to Research Question 3, which asked the following question: “To what extent does employee perception of psychological safety impact customer satisfaction?” For Hypothesis 3, as tested by H3a, after statistically controlling

for year, the relationship between the predictor variable (psychological safety) and the outcome variable (customer satisfaction) using the standard index was found to have abnormal results. The results indicate a statistically significant relationship with a standardized regression coefficient greater than 1 ($n = 60$, $\beta = 1.278$, R squared = 1.6335, $p < 0.001$). Because of the high R squared, adjusted R squared was not able to be calculated. These abnormally high results for the regression coefficient and R squared suggest a high likelihood of multicollinearity, a linear relationship between two independent variables that often results in erratic changes in coefficient estimates (Marquardt, 1970).

For Hypothesis 3, as tested by H3b, after statistically controlling for year, the relationship between the predictor variable (psychological safety) and the outcome variable (customer satisfaction) using the alternate index was found to be low ($n = 60$, $\beta = .432$, R squared = .187, adjusted R squared = .145) and statistically significant ($p = .010$). This direct effect indicates that a 1% rise in psychological safety as determined by the alternate index is correlated with a .432% rise in customer satisfaction.

Hypothesis 4. Hypothesis 4 proposes a response to Research Question 4, which asked the following question: “What is the role of employee engagement in the relationship between employee perception of psychological safety and customer satisfaction?” Generating a response to this question requires an analysis of both the direct effects as discussed above, which were generated using the ordinary least squares estimation method as performed through the PROCESS procedure (Hayes, 2020), as well as an indirect effect of the predictor variable on the outcome variable and the total effect of the predictor variable on the outcome variable as mediated by the proposed mediator variable. The indirect or mediated effect is found by taking the product of the coefficients for Path a and Path b ($a*b$), as shown in the Study Model in

Figure 2 (Judd & Kenny, 1981). The total effect is found by taking the sum of the direct and indirect effects ($c'+ab$) (Judd & Kenny, 1981), also shown in the study model in Figure 2. These indirect and total effects were tested in Hypothesis 4 through H4a and H4b, which gauge the perception of psychological safety using a standard index and alternate index, respectively.

After statistically controlling for year, the ordinary least squares regression analysis indicated the relationship between the predictor variable (psychological safety) as analyzed using the standard index and the outcome variable (customer satisfaction) was not mediated by employee engagement. However, these results are suspect given the possibility of multicollinearity. The total effect of psychological safety using the standard index on customer satisfaction was above 1 ($n = 60$, $\beta = 1.101$, R squared = 1.212) and statistically significant ($p < .001$). Once again, because of the high R squared, adjusted R squared was not able to be calculated. The indirect effect was weak and negative ($n = 60$, $\beta = -.0177$, R squared = .031, adjusted R squared = .021) as well as not statistically significant. In this analysis, mediation was considered significant at the 95% confidence level if the lower-level bootstrap confidence interval and the upper-level bootstrap confidence interval did not include 0; however, in this analysis, 0 falls within the confidence interval range of -.9026 to .2309, which were the lower-level and upper-level bootstrapped confidence intervals provided. Because the direct effect, or c' , which was tested for Hypothesis 3 and discovered to be $\beta = 1.278$, is not smaller in absolute size than the total effect, or c , as tested for Hypothesis 4a and discovered to be $\beta = 1.101$, the mediating variable does not mediate the relationship between the predictor variable and the outcome variable (Baron & Kenny, 1986). Employee engagement, therefore, does not partially or fully mediate the relationship between psychological safety as analyzed using the standard index

and customer satisfaction. Figure 3 presents the regression results for each path in the hypothesized mediation model using the standard index.

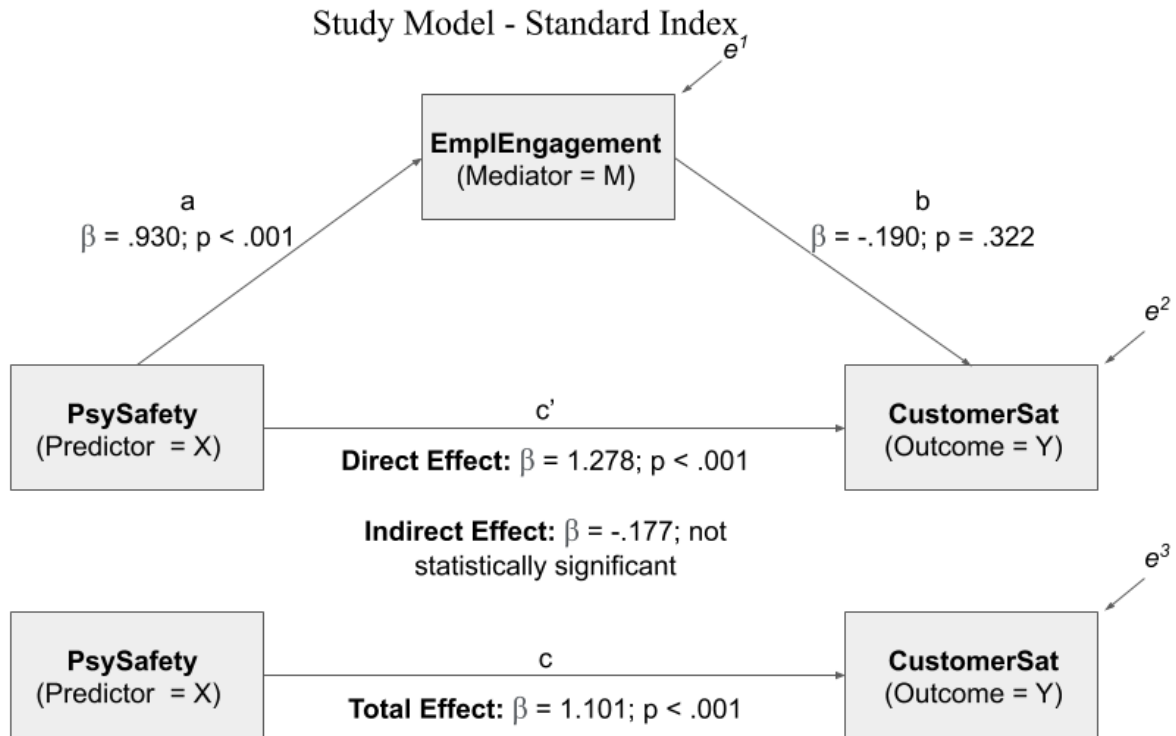


Figure 3. Study model, standard index.

After statistically controlling for year, the ordinary least squares regression analysis indicated the relationship between psychological safety as analyzed using the alternate index and customer satisfaction was partially mediated by employee engagement. The total effect of psychological safety using the alternate index on customer satisfaction was strong ($n = 60$, $\beta = .703$, R squared = .494, adjusted R squared = .468) and statistically significant ($p < .001$) and the indirect effect was weak ($n = 60$, $\beta = .271$, R squared = .073, adjusted R squared = .025) and statistically significant. In this analysis, mediation was considered significant at the 95% confidence level if the lower-level bootstrap confidence interval and the upper-level bootstrap

confidence interval did not include 0. In this analysis, 0 did not fall within the confidence interval range of 1.14 to 3.89. Because the direct effect, or c' , which was tested in Hypothesis 3a and discovered to be $\beta = .432$, is smaller in absolute size than the total effect, or c , as tested for Hypothesis 4a and discovered to be $\beta = .703$, then the mediating variable was found to partially mediate the relationship between the predictor variable and the outcome variable (Baron & Kenny, 1986). Figure 4 presents the regression results for each path in the hypothesized mediation model using the alternate index.

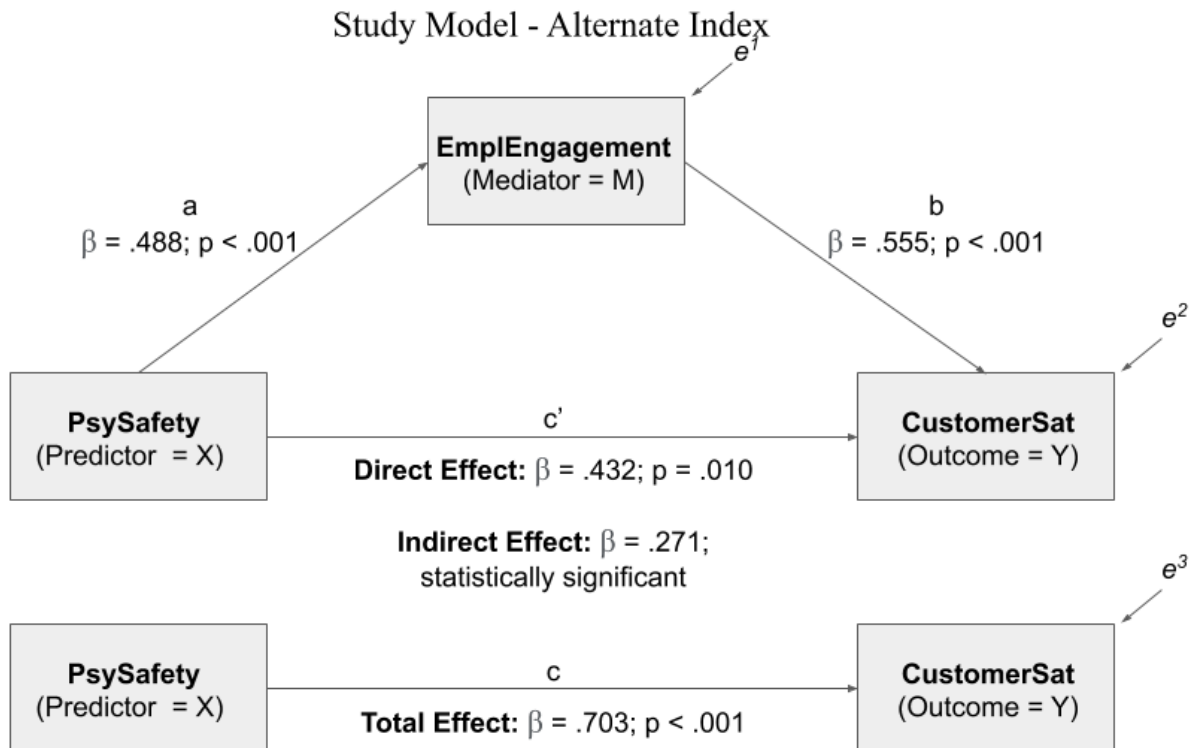


Figure 4. Study model, alternative index.

Summary of Effects

The analytical results of the direct, indirect, and total effects of the variables are given in Table 6, including the unstandardized coefficient (B) and standard error (SE), and the standardized coefficient (β), with significance measured at the 95% confidence level.

Table 6

Effects of Study Variables

		Standard Index				Alternate Index			
		Unstandardized Coefficients		Standardized Coefficient	Unstandardized Coefficients		Standardized Coefficient		
		<i>n</i>	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	
Direct Effects	PS to EE	61	.799	.032	.930*	.526	.061	.488*	
	EE to CS	60	-3.10	3.15	-.190	4.68	1.29	.555*	
	PS to CS	60	9.57	2.64	1.28*	2.47	.91	.432*	
Indirect Effect	PS to CS	60	7.65	-	-.177	1.30	-	.271*	
Total Effect	PS to CS	60	17.2	.759	1.10*	4.93	.656	.703*	

Note. PS = psychological safety; EE = employee engagement; CS = customer satisfaction; * indicates statistical significance at the 95% confidence interval

Statistical Validity Threats

The results using the standard index indicated extremely high correlations between the measure of psychological safety and the variables of employee engagement and customer satisfaction. While high correlations are not necessarily a problem, they indicate multicollinearity, which weakens the statistical usefulness of the proposed regression model (Marquardt, 1970). A common test for multicollinearity is the variance inflation factor (VIF), with a score of 3.33 or less indicating no multicollinearity concern and a score of 10 or greater indicating multicollinearity (Marquardt, 1970). Analytical results using SPSS collinearity diagnostics revealed a VIF of 15.14 for the regression of customer satisfaction on both psychological safety using the standard index and employee engagement, indicating that multicollinearity was occurring between these variables and that the measures may not be

distinguishable attributes. As such, although the results using the proposed regression model that uses the standard index were displayed, this model is not statistically valid because of the existence of multicollinearity (Marquardt, 1970).

To establish whether multicollinearity existed in the relationship between the measure of psychological safety using the alternate index and employee engagement, the same multicollinearity was conducted using these variables. Analytical results using SPSS collinearity diagnostics revealed a VIF of 2.33 for the regression of customer satisfaction on both psychological safety using the alternate index and employee engagement, indicating that multicollinearity was not occurring between these variables and that the measures are distinguishable attributes. Additionally, because of evidence suggesting the existence of multicollinearity, tests for other statistical validity threats (Shadish et al., 2002) were also run for the proposed regression model that uses the alternate index. SPSS was used to test for heteroscedasticity and abnormality in the distribution of residuals. For heteroscedasticity, SPSS results indicated that the null hypotheses for all four tests of the variance of errors could be rejected, indicating no concern. For normality of the residual distribution, the SPSS results indicated normal residual distribution. These results suggest that the proposed regression model that uses the alternate index is statistically valid.

Comparison of Back Office and Front Office Analyses

As stated, the above analysis was derived from data from nine offices in GSA. Four of these offices performed back-office functions, such as the agency's communication office and the agency's legal office. The customer satisfaction scores analyzed for these back offices were derived from the IPSS, a voluntary, anonymous, annual, Web-based agency survey administered to employees in the agency who received support from these back offices, with scores calculated

by taking the mean of customer responses for each office. The remaining five offices perform front-office functions, managing GSA's acquisition-related portfolios. The customer satisfaction scores analyzed for these front offices were derived from the CLS, a voluntary, anonymous, annual, Web-based agency survey administered to active agency customers, with scores calculated by taking the mean of customer responses for each office.

To provide additional context to explore whether there were major differences in the two existing customer satisfaction instruments used by the GSA, analyses were also conducted that separated the results of the four back offices from the results of the five front offices. This analysis was only conducted for the proposed regression model that uses the alternate index, as that model using the standard index was determined to be statistically invalid. The analysis revealed significant differences between these offices.

Office-Level Survey Results Analysis

As with the aggregate group, all three variables increased through the years for both the back offices and the front offices, which saw similar levels of increase. Correspondingly, the results reveal significant differences between the back offices and the front offices for all variables studied. Particularly significant was the difference in customer satisfaction surveys, which is likely attributable to the use of different survey instruments. Table 7 presents the overall mean and standard deviations for the study variables for the back offices and the front offices. Also included is the Cohen's *d* effect size to test for practical differences between the offices for each of the variables.

Table 7

*Office-level Mean and Standard Deviation for Study Variables and Cohen's d for Effect Size**Between Offices by Variable*

	Back offices			Front offices			<i>d</i>
	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>	<i>n</i>	
Psychological safety	.623	.064	27	.704	.057	35	1.34
Employee engagement	.697	.044	26	.747	.054	35	1.02
Customer satisfaction	6.68	.480	26	7.47	.226	35	2.11

Note. *d* = Cohen's *d*

Office-Level Results Summary

Unlike the aggregate group, the back offices and front offices did not yield support for all hypotheses. For Hypothesis 1, office-level analysis reveals slight differences between the results of the back offices and the front offices. After statistically controlling for year, the back office regression coefficient for the relationship between psychological safety, as measured using the alternate index, and employee engagement was low and statistically significant ($n = 27$, $\beta = .403$, R squared = .163, adjusted R squared = .049, $p < .001$), and the front office regression coefficient was moderate and statistically significant ($n = 35$, $\beta = .630$, R squared = .370, adjusted R squared = .309, $p < .001$). For Hypothesis 2, an office-level analysis reveals slight differences between the results of the back offices and the front offices. After statistically controlling for year, the back office regression coefficient for the relationship between employee engagement and customer satisfaction was moderate and statistically significant at the 95% confidence level ($n = 26$, $\beta = .573$, R squared = .328, adjusted R squared = .240, $p = .014$), and the front office regression coefficient was strong and statistically significant ($n = 35$, $\beta = .715$, R squared = .511, adjusted R squared = .463, $p = .034$). For Hypothesis 3, an office-level analysis reveals major

differences between the results of the back offices and the front offices. After statistically controlling for year, the back office regression coefficient for the relationship between psychological safety, as measured using the alternate index, and customer satisfaction was low and not statistically significant ($n = 26$, $\beta = .437$, R squared = .191, adjusted R squared = .089, $p = .068$), and the front office regression coefficient was weak and not statistically significant ($n = 35$, $\beta = .171$, R squared = .029, adjusted R squared = -.065, $p = .766$).

For Hypothesis 4, the total effect of psychological safety using the alternate index on customer satisfaction in the back offices was moderate ($n = 26$, $\beta = .668$, R squared = .447, adjusted R squared = .375) and statistically significant ($p < .001$) and the indirect effect was weak ($n = 26$, $\beta = .231$, R squared = .053, adjusted R squared = -.071) and statistically significant given that 0 did not fall in the lower-level and upper-level confidence interval range of 0.60 to 3.36. Because the direct effect, or c' , which was tested for Hypothesis 3a and discovered to be $R = .437$, is smaller than the total effect, or c , as tested for Hypothesis 4a and discovered to be $R = .668$, then the mediating variable was found to partially mediate the relationship between the predictor variable and the outcome variable (Baron & Kenny, 1986).

For the front offices, the total effect of psychological safety on customer satisfaction was moderate ($n = 35$, $\beta = .621$, R squared = .386, adjusted R squared = .327) and statistically significant ($p = .035$) and the indirect effect was low ($n = 35$, $\beta = .451$, R squared = .203, adjusted R squared = .126) and not statistically significant given that 0 fell in the lower-level and upper-level confidence interval range of -.5122 to 8.388. Because the direct effect, or c' , which was tested for Hypothesis 3a and discovered to be $R = .171$, is smaller than the total effect, or c , as tested for Hypothesis 4a and discovered to be $R = .621$, then the mediating variable was found to partially mediate the relationship between the predictor variable and the outcome variable

(Baron & Kenny, 1986). Table 8 presents the analytical results of the direct, indirect, and total effects of the variables, including the unstandardized coefficient (B), the SE (SE), and the standardized coefficient (β) with significance measured at the 95% confidence level.

Table 8

Office-Level Effects of Study Variables

		Back Offices				Front Offices			
		n	B	SE	β	n	B	SE	β
Direct effects	PS to EE	27	.317	.059	.403*	35	.470	.059	.630*
	EE to CS	26	2.87	1.40	.573*	35	5.16	1.40	.715*
	PS to CS	26	2.77	.920	.437	35	2.39	.921	.171
Indirect effect	PS to CS	26	.813	-	.231*	35	1.12	-	.451
Total effect	PS to CS	26	4.82	.691	.668*	35	4.81	.691	.621*

Note. PS = Psychological safety; EE = Employee engagement; CS = customer satisfaction; * indicates statistical significance at the 95% confidence interval

Chapter V

Discussion

In this chapter the results and implications of the mediation analysis performed in this study are interpreted and discussed to answer the study's research questions. This chapter also provides recommendations both for future research and for practical application of the results.

Data Analysis

This study examined the relationship between psychological safety and customer satisfaction in a U.S. federal government agency, as mediated by the variable of employee engagement. While no current academic theory seeks to explain the existence of a relationship between psychological safety and customer satisfaction, research on the existence of a relationship between psychological safety and employee engagement (Bailey et al., 2017; Bologna et al., 2015; Dollard & Bakker, 2010; Edmondson, 1999; Kahn, 1990; Kark & Carmeli, 2009; MSPB, 2008) as well as research on the existence of a relationship between employee engagement and customer satisfaction (Bailey et al., 2017; Bakker, 2017; Harter et al., 2002; Macey et al., 2009; Partnership for Public Service, 2019a; Schneider et al., 2009) were determined to be sufficient to infer the indirect relationship proposed by this study. Additionally, theoretical work by Eisenberger et al. (1986) to suppose the existence of a positive workplace reciprocity dynamic resulting in engaged employees as well as theoretical work by Wolter et al. (2019) to suppose the susceptibility of customers to the trajectory of employee moods and behaviors provide a foundation upon which this study's hypothesized relationships could be

built. In line with the research on and theories about these implicit relationships, the results of this study indicated support for all hypotheses, finding positive and statistically significant relationships among all the variables and finding that the relationship between psychological safety and customer satisfaction seemed to be mediated by employee engagement using the alternate index.

Because an SPSS collinearity diagnostics revealed that multicollinearity was occurring between the variables of psychological safety using the standard index and employee engagement, the results from the proposed model using that index are not analyzed in this chapter, as the regression coefficient estimates are unreliable. Analyzing these unreliable results would undermine the validity of this study. As such, only the results from the proposed model measuring the perception of psychological safety based on the alternate index were analyzed in this chapter. This measure of psychological safety using the alternate index was determined to have a small difference from the measure using the standard index given a Cohen's *d* effect size of .261 (Remler & Van Ryzin, 2011). This difference, although small, is both statistically and practically significant. Additionally, the differences between the means of the study variables in the uncombined office groupings were determined to be large (employee engagement = 1.02, psychological safety = 1.34, customer satisfaction = 2.11) (Remler & Van Ryzin, 2011). These large differences between the mean results from the back offices and the front offices are both statistically significant and practically significant.

Research Question 1

Research Question 1 asked, "To what extent does employee perception of psychological safety impact employee engagement?" As tested in Hypothesis 1, the data revealed that the perception of psychological safety has a low but statistically significant impact on employee

engagement ($\beta = .488$, R squared = .238, adjusted R squared = .199, $p < .001$) after statistically controlling for year. The unstandardized coefficient, which allows for an understanding of the relationship using the measurement scale of the data, indicates that every unit increase in psychological safety using the standard index is expected to result in a .526 unit increase in employee engagement. The SE of the regression, which indicates the average distance of the observed values from the regression line (Remler & Van Ryzin, 2011), is small at .061, suggesting that the model has a good fit.

Similar results emerged from the smaller, uncombined office groupings, where the relationship was slightly smaller in the back offices ($\beta = .403$, $p < .001$) and slightly larger in the front offices ($\beta = .630$, $p < .001$). Additionally, both office groupings had similarly sized unstandardized coefficients and small SEs, indicating little difference between the groupings regarding the goodness of fit. These findings of positive correlations are consistent with and support OST's POS dynamic and the underlying humanist management perspective.

Using the adjusted R squared result of .199 to estimate the strength of the relationship in the entire population of the federal government, the data suggest that 19.9% of a federal office's employee engagement score is attributable to that office's perception of psychological safety, as determined by Question 17 on the FEVS. This suggests that, across the federal government, psychologically safe workplace environments influence 19.9% of an office's employee engagement scores. This finding has both broad and specific implications.

Broadly, because of the current charge to U.S. federal agencies through OMB's Cross-Agency Priority goal program to strengthen employee engagement (OMB, 2018b), this study's findings on the roughly 20% of employee engagement scores attributable to psychological safety may be sufficient to influence OMB's instructions to federal agencies on ways to improve

employee engagement. Additional OMB guidance could include instructions to enhance agency training on fostering psychological safety as a way to improve employee engagement, such as through encouraging agency leaders to build a sense of organizational membership or belonging (Eisenberger et al., 2001), or establish organizational practices that consistently demonstrate to employees that their input is sought, valued, and expressible without rejection or reprisal (Baer & Frese, 2003). Additionally, the understanding that roughly 20% of an office's employee engagement scores may be influenced by psychological safety may assist the MSPB or the GAO in better assessing employee engagement across the federal government by gauging psychological safety.

More specifically, this suggested 20% correlation may be sufficient to assist federal managers directly. Federal managers charged with increasing their office's engagement scores may, as a result of this study, begin considering actions to increase psychological safety as a way to improve employee engagement, including through soliciting and providing mechanisms for employee input (Fast et al., 2013), showing appreciation for employee input (Bens, 2007; Leeman, 2010), and reassuring employees that their input will not result in negative repercussions (Walumbwa & Schaubroeck, 2009). Alternatively, federal managers may be made more aware as a result of this study of those behaviors that may lower employee engagement because of their impact on the perception of psychological safety. These behaviors include displaying impatience or intolerance (Milliken et al., 2003), displaying inconsistency in demonstrating stated values (Kahn, 1990), and undermining trust through micromanaging employees (Lee et al., 2004). Finally, given the research indicating a relationship between employee engagement and decreased turnover, increased innovation, and improved efficiency

(OPM, 2015b), the results of this study may ultimately assist federal managers in creating a more productive, innovative, and efficient federal workforce.

Research Question 2

Research Question 2 asked, “To what extent does employee engagement impact customer satisfaction?” As tested in Hypothesis 2, the data revealed that employee engagement has a moderate but statistically significant impact on customer satisfaction ($\beta = .555$, $R^2 = .308$, adjusted $R^2 = .272$, $p < 0.001$), after statistically controlling for year. The unstandardized coefficient gives a better indication of the relationship from the actual scales used, suggesting that every unit increase in employee engagement is expected to result in a 4.68 unit increase in customer satisfaction, with a moderately sized SE of the regression of 1.29. Similar results were discovered in both uncombined office groupings, where the variables revealed a moderate and statistically significant correlation in the back offices ($\beta = .573$, $p = .014$) and a strong and statistically significant correlation in the front offices ($\beta = .715$, $p = .034$). Even though the SEs were the same for both office groupings, the large difference between the unstandardized coefficient of the back office ($B = 2.87$) and the unstandardized coefficient of the front office ($B = 5.16$) indicate possible differences in either the survey instruments used or the type of customers surveyed.

These findings suggest a positive relationship between the mediator variable (employee engagement) and the outcome variable (customer satisfaction) and are consistent with ESTT. These results also show consistency with academic research suggesting a relationship between employee engagement and customer satisfaction (Bakker, 2017; Bailey et al., 2017; Gallup, 2018; Harter et al., 2002; Macey et al., 2009; Partnership for Public Service, 2019a, 2019b; Schneider et al., 2009). The results are also consistent with research on the New Public

Management framework (Li et al., 2019b; Osborne & Gaebler, 1992) as well as many private-sector models, including the service climate model (Schneider & Bowen, 1992) and the service-profit chain (Heskett et al., 1994).

Using the adjusted *R* squared result of .272 to estimate the strength of the relationship in the population of the federal government, the data suggest that 27.2% of a federal office's customer satisfaction score is attributable to that office's level of employee engagement. This suggested correlation can help explain the relative stagnancy of both federal employee engagement scores, which moved from 67% in 2011 (GAO, 2015) to 68% in 2019 (OPM, 2019b), and federal customer satisfaction scores, which moved from 66.9% in 2011 to 68.1% in 2019 (ACSI, 2012, 2020b). Assuming the existence of the suggested correlation, it may be worthwhile for the federal government to consider alternate approaches to improving these scores, particularly given that almost three decades of continued federal government focus on the customer (Executive Order No. 12862, 1993; Executive Order No. 13571, 2011) has resulted in customer satisfaction scores labeled "the worst of the worst" (Nextgov.com, 2017). Instead of continued emphasis on customer satisfaction itself, OMB may consider shifting focus to a known variable responsible for 27.2% of an office's annual customer satisfaction score, particularly because research suggests that the variable of employee engagement has other positive outcomes as well, including reduced turnover (Harter et al., 2013; OPM, 2015c), better employee mental health (Demerouti et al., 2001), and improved productivity (OPM, 2015c) and program effectiveness (MSPB, 2010). This action by the OMB may be particularly helpful for federal managers seeking to determine the best use of limited funds to manage their public administration programs, as providing managers fewer directives may result in more unified activities that focus more on engagement efforts rather than fragmenting limited training budgets

on both engagement and customer satisfaction activities. In addition, the findings from Hypothesis 2 are of particular interest to federal agencies that fund much of their operations through fee-based cost reimbursements, as focusing on a variable that the data suggests is responsible for more than a quarter of an agency's customer satisfaction scores may lead them to create initiatives to enhance their offices' understanding of engagement as a way to improving customer satisfaction and, ultimately, revenue.

Research Question 3

For Research Question 3, as tested using the alternate index as proposed in subhypothesis 3b, the data revealed low, statistically significant support for the direct relationship between the predictor variable (psychological safety) and the outcome variable (customer satisfaction) after statistically controlling for year ($\beta = .432$, R squared = .187, adjusted R squared = .145, $p = 0.010$). The unstandardized coefficient suggests that every unit increase in psychological safety is expected to result in a 2.47 unit increase in customer satisfaction, with a moderate sized SE of the regression of .91.

When using data from the uncombined office groupings, however, the variables did not reveal statistically significant correlations, with the back offices showing low and statistically not significant correlations between the variables ($\beta = .437$, $p = .068$) and the front offices showing weak and statistically not significant correlations between the variables ($\beta = .171$, $p = .766$). While the findings from the uncombined office groupings were not found to be statistically significant, they indicate a similar relationship strength as found in the aggregate group. The lack of statistical significance in the results of the uncombined office groupings may be attributed to the use of parametric tests of significance conducted through the regression analyses as part of the mediation analysis despite the small samples used, which are less likely to be normally

distributed. This assumption is bolstered by the finding that the unstandardized coefficients and SEs for the back offices ($B = 2.77$, $SE = .920$) and the front office ($B = 2.39$, $SE = .921$) were similarly sized, indicating that any differences between the uncombined office groupings and the aggregate group are likely attributed to the use of parametric tests of significance rather than differences in either the survey instruments used or the type of customers surveyed.

As stated in Chapter 2, no current academic theory adequately explains the existence of a relationship between the concepts of psychological safety and customer satisfaction. However, despite this relationship being overlooked in the literature, the results of a positive, low strength, but statistically significant correlation between these two variables are not unexpected given the implicit existence of this relationship.

Using the adjusted R squared result of .145 to estimate the strength of the relationship in the population of the federal government, the data suggest that 14.5% of a federal office's customer satisfaction score is attributable to that office's level of psychological safety, which is in addition to the 27.2% of a federal office's customer satisfaction score attributable to employee engagement. Although 14.5% may not be sufficient alone to compel OMB to deprioritize emphasis on customer satisfaction in favor of more emphasis on psychological safety, the addition of other positive outcomes of psychological safety that have been suggested by researchers may be enough to warrant change. These include increased innovation (Bradley et al., 2012; Liang et al., 2019), more empowered employees (Bens, 2007; Leeman, 2010), more motivated employees (Cordery et al., 2009; Idris et al., 2015), and better organizational goal attainment (Baer & Frese, 2003). OMB's consideration of all outcomes of psychological safety may compel it to begin emphasizing in its guidance to agencies training on how to foster supportive office environments in which employees feel psychologically safe to take risks, admit

mistakes, and voice dissent. Additionally, given the roughly 20% of employee engagement score that is attributable to psychological safety along with the aforementioned positive outcomes of employee engagement, an even stronger case can be made for action by OMB to emphasize agency training on psychological safety.

Research Question 4

Similar to Research Question 3, although there is no current academic theory exploring employee engagement as a mediating variable between psychological safety and customer satisfaction, because this mediated relationship could be inferred given the existing theories and extant research, this relationship was tested both for the indirect effect of psychological safety on customer satisfaction through the mediator of employee engagement and for the total effect of psychological safety on customer satisfaction. In testing for Hypothesis 4 through the use of the alternate index as proposed in subhypothesis 4b, the data revealed a weak and statistically significant indirect effect of psychological safety on customer satisfaction ($\beta = .271$, R squared = .073, adjusted R squared = .025), including a relatively low unstandardized coefficient ($B = 1.30$), and a strong and statistically significant total effect ($\beta = .703$, $p < .001$), with a relatively large unstandardized coefficient ($B = 4.93$) yet low SE of the regression ($SE = .656$). Similar findings were discovered in both uncombined office groupings, where the total effect of psychological safety on customer satisfaction was found to be moderate and statistically significant using data from both the back offices ($\beta = .668$, R squared = .447, adjusted R squared = .375, $p < .001$) and the front offices ($\beta = .621$, R squared = .386, adjusted R squared = .327, $p = .035$), with relatively large unstandardized coefficients and low SE of the regression in both the back offices ($B = 4.82$, $SE = .691$) and the front offices ($B = 4.81$, $SE = .691$). The indirect effect of psychological safety on customer satisfaction was found to be weak and statistically

significant using data from both the back offices ($\beta = .231$, R squared = .053, adjusted R squared = -.071) and low but not statistically significant using data from the front offices ($\beta = .451$, R squared = .203, adjusted R squared = .126). The unstandardized coefficients were relatively small for both the back offices ($B = .813$) and the front offices ($B = 1.12$).

The results suggest that employee engagement has a mediating role in the relationship between psychological safety and customer satisfaction given that the direct effect ($\beta = .437$) is smaller than the total effect ($\beta = .703$) (Baron & Kenny, 1986). However, although the data suggest that employee engagement does mediate the relationship, because it does not fully explain the process by which psychological safety impacts customer satisfaction, more research is needed to better understand other mediating variables along this path.

The results were not unexpected given the implicit existence of this relationship, both in theory and practice. The inferred theoretical relationship can be seen in the social exchange premise behind OST, which has been applied not only to the relationship between managers and employees but also to the relationship between organizations and their customers (Arnett et al., 2003; Eiriz & Wilson, 2006), where the theory suggests that a customer's perception of positive treatment is reciprocated with repeat business. This dynamic in OST, known as "perceived provider support" (Shanock & Eisenberger, 2009), suggests the possibility of parallel phenomena occurring side by side. However, a macroview of the entire series of relationships explained by OST suggests not a parallel dynamic but a causal chain in which organizational actions that create a felt obligation in employees ultimately result in the repayment of those obligations through engaged activity that pleases the customer.

The inferred theoretical relationship can also be seen in ESTT, in which the role of the manager is considered an essential component in fostering environments in which employees are

satisfied and engaged (Wolter et al., 2019). Wolter et al. (2019) argued that this is particularly true in those environments with greater employee–customer interactions, as managers in those situations who are most encouraged to take actions to foster environments with high employee satisfaction.

Private-sector models also imply the existence of this relationship. The service climate model (Schneider & Bowen, 1992) is based on organizations needing a climate of service to enable employees to properly assist customers, but implicit in this theory is a foundation of safety that allows employees to feel supported enough to engage in activities that often go beyond standard protocol as a way of pleasing and ultimately gaining repeat business from the customer. Similarly, the Service-Profit Chain (Heskett et al., 1994), which links employee satisfaction and productivity to customer satisfaction and loyalty, emphasizes the importance of high internal service quality in producing high external service quality and ultimately profitability. However high internal service quality is not likely to be created in an intolerant and inconsistent organizational environment, as it implicitly requires employees to feel comfortable flagging quality concerns. Finally, new public management promotes the notion that government implementation of private-sector practices can improve citizen satisfaction with government services (Osborne & Gaebler, 1992). However, underpinning the risk-taking approach inherent in the theory is a risk-tolerant, supportive environment in which employees feel safe to show initiative, share ideas, and pilot new concepts.

While the suggestion that 70.3% of a federal office’s customer satisfaction score can be attributed to employee perception of psychological safety may seem high, it can be considered unsurprising when the underlying environmental factors of the aforementioned theories and frameworks are considered. Indeed, given the relatively low direct impact of psychological

safety on both employee engagement and customer satisfaction, it can be argued that the strong total effect of psychological safety on customer satisfaction is best and perhaps only understood through this recognition of the elemental yet essential role office environment plays in influencing the factors that lead to customer satisfaction. This understanding of the fundamental role the data suggests psychological safety plays in influencing customer satisfaction has been recognized not only by Google but also by other companies, such as Southwest Airlines (Gittell, 2003), Pixar (Krapivin, 2019), and AirBnB (Morgan, 2017), which have all implemented deliberate efforts to encourage employees to speak their minds. Similar measures to foster environments that encourage speaking out can be found in the U.S. federal government as well. Such examples include the U.S. State Department's Dissent Channel, which allows employees to raise policy critiques to senior officials while protecting them from retribution and is credited with leading to the Dayton Accords that ended the Bosnian war (Ketyal, 2016), and the U.S. Central Intelligence Agency's Red Teams, semi-independent cells charged with finding flaws in intelligence reports and mission plans (Zenko, 2015). Although neither the State Department nor the Central Intelligence Agency have customers in the traditional sense, the environments they have fostered to encourage speaking up and speaking out have doubtless resulted in the identification of important concerns that have ultimately benefited their customers: U.S. citizens.

Interpretation of the Findings

The findings of this study were consistent with the literature and theories, showing that federal employees' perceptions of their office's level of psychological safety were significantly correlated with their office's level of engagement and level of customer satisfaction. While the results of mediation analysis do not by themselves indicate any causal ordering of variables, prior research and theories on the relationships studied do support directionality in the variables,

suggesting that psychological safety is a significant predictor of both employee engagement and customer satisfaction in a federal environment and that employee engagement is a significant predictor of customer satisfaction in a federal environment.

Theoretical Implications

These findings significantly contribute to existing academic theory in several ways. First, the study's findings are the first to indicate a direct relationship between the perception of psychological safety and customer satisfaction as well as an indirect relationship between those variables through the mediator of employee engagement. These relationship indications add new information to the literature and expose new territory for academic theorists to explore to understand and explain the phenomena occurring, leading to a deeper understanding of the true relationships.

Second, the results suggest extending the ideas behind social exchange theory (Homans, 1958; Thibaut & Kelley, 1959) and OST (Eisenberger et al., 1986) to include the premise that the reciprocity dynamics witnessed at the employer-employee level and the employee-customer level are connected in a causal chain. Similarly, the results suggest extending the idea behind ESTT (Wolter et al., 2019) to include the premise that employees' perception of their organizational environment can influence their attitudes and behaviors and ultimately their customers' attitudes. Taken together, the results suggest a tightening of a gap between social exchange theories and emotional contagion theories, finding evidence that supports the notion that feelings of being supported can ripple through an organization, from employer to employee to customer.

Finally, the results challenge future theorists to explore how broadly the indications of relationships should be observed. For example, because the results add to the literature indications of relationships occurring in the narrow portion of the federal government that funds

itself mainly through fee-based cost-reimbursements, future theorists could be challenged with investigating whether this public-sector funding model has a role in this phenomenon or whether the phenomenon can be expected in other environments, including in all public-sector environments or all public-sector and private-sector environments.

Practical Implications

These findings also have several significant practical implications. First, the indications of relationships between the variables may assist federal managers charged with improving employee engagement and customer satisfaction scores, especially those with limited funds, by offering them an alternative and possibly inexpensive path to improving these scores. Additionally, the indications of relationships may encourage federal managers to motivate their employees to flag concerns and share their ideas given the suggested outcomes of psychologically safe environments, including better goal attainment (Baer & Frese, 2003), more creative ideas (Rouse, 2020), more motivated employees (Idris et al., 2015), and more innovation (Bradley et al., 2012; Liang et al., 2019).

Second, the indications of relationships may impact the leadership or human resources training that the OPM and the MSPB provide federal agencies. The suggestions from the results of the correlation between psychologically safe office environments and customer satisfaction may be enough to compel the OPM and the MSPB to conduct research to validate or disconfirm the strength of this relationship or, given the other suggested outcomes of psychologically safe office environments, begin proposing changes to the leadership or human resources training offered, especially to those agencies that fully or partially self-fund through fee-based programs. This is particularly significant given the cost impact that even small changes to federal employee engagement can have (Rivera & Flinck, 2011).

Finally, an improved understanding of the role that psychological safety plays in influencing customer satisfaction could have significant implications to private sector management practices, including leading to a broader promotion of office environments conducive for interpersonal risk-taking, such as those recommended by Google (“Tool,” 2016) and Microsoft (2019).

Assumptions and Limitations

Assumptions

Both theoretical and methodological assumptions were made in this study. From a theory perspective, it was assumed that the perception of psychological safety is a satisfactory indicator of supportive office environments (Edmondson, 2018; Rozovsky, 2015). Additionally, although the construct of employee satisfaction is not synonymous with the construct of employee engagement, it was assumed that employee attitudes and behaviors associated with engagement can sufficiently substitute for attitudes and behaviors associated with satisfaction (Little & Little, 2006). It was assumed that an indirect relationship between the concepts of psychological safety and customer satisfaction through employee engagement can reasonably be inferred given the existing theories and extant research. It was also assumed that employee engagement is a relatively stable characteristic that does not ebb and flow during the day based on tasks (MSPB, 2008). Additionally, it was assumed that there were sufficient similarities between the self-professed satisfaction scores of internal customers and external customers (Gremier et al., 1994; Hallowell et al., 1996; McDermott & Emerson, 1991). Finally, it was assumed that theories used in this study would apply to a federal workforce.

From a methodological perspective, it was assumed that survey respondents understood the survey questions and terms and provided honest, candid responses. It was also assumed that

the survey instruments and indices appropriately measured the study variables and were sufficiently valid and reliable. It was assumed that the theories have been explored well enough qualitatively to test them quantitatively and that a quantitative approach using the mediation analysis statistical technique would provide sufficient insight to make generalizations about the relationships. It was also assumed that the sample selected adequately represented the population and that the population statistics for these measures are normally distributed.

Limitations

Several limitations were acknowledged and accepted as a part of this study. These include the likelihood of other variables affecting employee engagement and customer satisfaction, the lack of testing to determine the reliability data of the CLS and the IPSS, the validity and reliability of the alternate index in accurately evaluating the perception of psychological safety, and the concern about drawing broad conclusions about federal employees and customers from this study, particularly given the small sample size, short time period studied, and lack of qualitative elements to corroborate findings. Additional limitations include the inability of the results to suggest directionality, the lack of clarity around whether and how the study variables are and can be manipulated by managers or organizations in a federal environment, and the lack of clarity on the roles that culture and time play in the perception of workplace psychological safety. Finally, the study was limited by only receiving data from nine of the 10 offices and by only receiving data from a federal agency with a fee-based cost structure.

Delimitations

Several delimitations were also acknowledged and accepted as a part of this study. These included analyzing data only from a limited number of offices in only one agency, analyzing data

only from the federal workforce, and controlling only for year and the other control variables. Additional delimitations include the analysis of only one of three proposed antecedents to employee engagement as proposed by Kahn (1990) as well as an analysis of the construct of customer satisfaction as opposed to other, popular customer measures, including customer loyalty or customer experience.

Recommendations

The results suggest that several recommendations can be made to both the practitioner community and the academic community.

Recommendations for the Federal Practitioner Community

Given the study's findings indicating psychological safety and employee engagement as antecedents of customer satisfaction, it is recommended that the OMB (2018b) recognize these relationships and emphasize in its instructions to federal agencies on improving customer satisfaction actions federal managers can take that research suggests will lead to safer and more engaged office environments. These actions can include encouraging agency leaders to build a sense of organizational membership (Eisenberger et al., 2001), foster cultures in which employee input is perceived as valued (Baer & Frese, 2003), and discourage agency leaders from displaying behaviors that may lower the perception of psychological safety, including the display of impatience (Milliken et al., 2003), inconsistency (Kahn, 1990), and micromanagement (Lee et al., 2004). It is recommended that the OMB include in these instructions academic findings on additional positive outcomes of safe and engaged office environments, including increased innovation (Bradley et al., 2012; Liang et al., 2019), more empowered employees (Bens, 2007; Leeman, 2010), more motivated employees (Cordery et al., 2009; Idris et al., 2015), and better organizational goal attainment (Baer & Frese, 2003).

Additionally, given the existing research on the benefits of management practices that promote safe and engaged office environments, it is recommended that the OPM and the MSPB consider providing further guidance to agency human resources managers on the importance of hiring supervisors with the soft skills necessary to promote these environments. Although the OPM (2001) has stated that “agencies must make the selection and development of first-level supervisors a top human resource priority” (p. 2) and the MSPB (2010) has suggested that “the most effective way to improve organizational performance is to improve first-level supervisors” (p. 1), explicit instructions to heavily weigh these skills when recruiting may help agencies build cultures that make employees feel safe and engaged.

Finally, because there is no current annual federal customer satisfaction survey, it is recommended that the OPM consider creating one to better and more consistently gauge this measure across the federal government. It is further recommended that the OPM consider developing this survey as a way to help federal agencies measure the key performance indicator of “satisfaction” that is required as a part of OMB’s Circular A-11 Section 280 (OMB, 2018a). Although this section of the circular establishes a baseline for managing customer experience for the top-25 federal services that OMB defined as “high impact” (OMB, 2020), broadening this survey federal governmentwide would allow federal services not defined as “high impact” to gauge their customers’ satisfaction in the same way. Examples of services not classified as high-impact that could capitalize on this service include GSA’s USA.gov program and its dot-gov registrar, the U.S. Department of Agriculture’s Supplemental Nutrition Assistance Program program, the U.S. Department of Commerce’s Student Temporary Employment Program program, the U.S. Department of Homeland Security’s National Flood Insurance Program, and

the U.S. Department of Labor's Unemployment Insurance program, none of which are included in the top 25 federal services.

Recommendations for the Federal Research Community

It is recommended that the OPM, the MSPB, or the GAO conduct research on the relationship between Question 17 of the FEVS and employee engagement scores to corroborate, adjust, or disconfirm the results of this study. This research could lead not only to a better understanding of the true relationship but also to procedures that assess and ultimately improve employee engagement across the federal government.

Additionally, because of previous findings of statistical relationships between federal employee engagement and retention, productivity, job satisfaction, commitment, and decreased absenteeism (OPM, 2015c) as well as reduced sick leave, fewer complainants, and reduced intent to leave (MSPB, 2010), it is recommended that the OPM and MSPB conduct research to ascertain whether those variables also correlate with federal employee perception of psychological safety. Similarly, it is recommended that the OPM and MSPB conduct research to ascertain whether those variables correlate with levels of customer satisfaction.

Finally, because this study's findings suggest that employee engagement does not fully mediate the relationship between psychological safety and customer satisfaction, it is recommended that these agencies conduct research to better understand other antecedents of customer satisfaction that could be influenced by the perception of psychological safety in an attempt to better explain the process by which psychological safety impacts customer satisfaction. This research could include qualitative studies to better understand federal customers and their expectations or federal employees' sense of felt obligation toward their

office or agency as well as quantitative research that seeks to find correlations between employee attributes or activities and customer attributes or activities.

Recommendations for Future Academic Research

While efforts were made to ensure this study comprehensively reviewed the mediating role of employee engagement in the relationship between psychological safety as perceived by federal employees and customer satisfaction, there are areas related to this study that would benefit from further scholarly attention.

The indications of the existence of multicollinearity between psychological safety as measured using the standard index and employee engagement demanded that the results from the proposed model using that index not be analyzed in this study; however, future scholars might want to analyze the results of this index in another agency or through a different time period to determine if multicollinearity continues to be a concern. The performance of a similar study would be helpful at those agencies funded through fee-based cost reimbursements that have existing customer satisfaction data, including the U.S. Patent and Trademark Office, the Federal Highway Administration, and the Consumer Financial Protection Bureau. The results of similar studies performed at federal agencies funded through regular Congressional appropriations, including HISP programs, may also serve in better understanding the relationship among the variables, as would results of similar research at state and local levels of government. Alternatively, given the existing research supporting the complexity of the notion of psychological safety, future scholars may want to consider modifying the standard index by using fewer or different questions.

Future scholars may also want to consider shifting the outcome variable of this research to customer experience, a term OMB uses in Circular A-11 Section 280 (OMB, 2018a) to

represent the cumulative experience customers have with an agency's services rather than just the customer's overall level of satisfaction. Similarly, future scholars may want to study the variable of employee satisfaction as a proposed predictor or mediator variable in future studies.

Conclusion

This study proposed and tested in a large federal agency a hypothesized correlation between federal employees' perception of psychological safety and customer satisfaction as mediated by employee engagement. The results of this study, which looked at 7 years' of data from existing surveys from nine offices in a single agency, indicated a positive, statistically significant relationship between federal employees' perceptions of psychological safety and customer satisfaction at the office level, as partially mediated by employee engagement. These results aligned with extant research on these variables and supported the hypotheses proposed in this study. The results also supported the existence of a relationship between the concepts of psychological safety and customer satisfaction, a relationship that was inferred given the findings from extant research but which has no current academic theory to explain it and which had scarcely been tested (Finsterwalder et al., 2011), including no discoverable studies on this relationship in the federal government.

This study's results serve to improve the appreciation in agencies and federal managers for the effect that supportive office environments in which employees feel psychologically safe to take risks, admit mistakes, and voice dissent can have on employee engagement and ultimately customer satisfaction. However, additional academic attention to either substantiate or cast doubt on this study's findings would serve current and future public administrators by deepening the understanding of these relationships in a federal environment. Additionally, academic attention to disaggregate the macro-level data in this study into a lower level of analysis, such as

supervisor-specific or individual-specific input, would also serve to substantiate or cast doubt on this study's findings. Individual-level data is collected for all three surveys used in this study. If made available, this data would allow for more thorough analysis of the phenomena, allowing for not only an enriched quantitative understanding of the relationships at hand but also an enriched qualitative understanding. This deeper understanding of the effects that psychological safety, employee engagement, and office environment in general have on customer satisfaction can support agency and federal manager decision making on the most effective use of limited funds to successfully deliver services to customers, a challenge particularly troublesome in the current environment of federal budget cuts and rising customer expectations, but one needing resolution given the continued customer focus of the federal government (Executive Order No. 12862, 1993; Federal Service Labor-Management Relations Act, 2003; Memorandum on Customer Service, 1995; OMB, 2018a).

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Appendix A

VSU Institutional Review Board Exemption Report



**Institutional Review Board (IRB)
For the Protection of Human Research Participants**

PROTOCOL EXEMPTION REPORT

Protocol Number: 04026-2020

Responsible Researcher: Mr. Justin Ward

Supervising Faculty: Dr. Nandan Jha

Project Title: *The Role of Perceived Psychological Safety in Federal Employees in Predicting Customer Satisfaction: A Path Analysis.*

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is Exempt from Institutional Review Board (IRB) oversight under Exemption Category 4. Your research study may begin immediately. If the nature of the research project changes such that exemption criteria may no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research.

ADDITIONAL COMMENTS:

- *Upon completion of this research study all data (email correspondence, survey data, participant name lists, etc.) must be securely maintained (locked file cabinet, password protected computer, etc.) and accessible only by the researcher for a minimum of 3 years.*

If this box is checked, please submit any documents you revise to the IRB Administrator at irb@valdosta.edu to ensure an updated record of your exemption.

Elizabeth Ann Olphie *06.06.2020*
Elizabeth Ann Olphie, IRB Administrator

Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-253-2947.

Revised: 06.02.16

Appendix B
CITI Certificate



Completion Date 21-Aug-2018
Expiration Date 20-Aug-2021
Record ID 28258137

This is to certify that:

Justin Ward

Has completed the following CITI Program course:

Human Research (Curriculum Group)
IRB Basic (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Valdosta State University



Verify at www.citiprogram.org/verify/?w126a5bbd-dee1-495c-9599-a7d78712fbae-28258137