UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

EMPLOYEE EMPOWERMENT, SELF-DETERMINATION THEORY, AND EMPLOYEE ENGAGEMENT: A MEDIATION MODEL

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

Degree of

DOCTOR OF PHILOSOPHY

By

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Norman, Oklahoma
2017

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Acknowledgements

I would like to sincerely thank Dr. Robert Terry for his unparalleled support, kindness, patience and understanding throughout the process of completing my dissertation. The many hours spent with me answering all of my questions pertaining to my study will forever be appreciated. You are a master in your field, and I am truly indebted to you for your willingness to serve as my Chair.

To my committee, Dr. Barbara Greene, Dr. Jorge Mendoza, Dr. Ryan Bisel and Dr. Trent Gabert my utmost thanks and respect for all you do and your willingness to share your knowledge with me. I have been on this path a little longer than I had hoped, and you never gave up on me; thank you for that!

To my friend and fellow cohort, Dr. Carol Fontanese, I cannot thank you enough for your words of encouragement and regular check-ins making sure I was focused and on target for completion. You are a true inspiration and I am so happy we experienced this journey together.

I want to thank my family. First, I could not have completed my degree without the endless support and encouragement from my husband, Jim. Your undying belief in me gave me strength to keep pushing myself even during those darkest of hours. You insulated me from the daily stressors of life, so I could remain focused and dedicated to my degree. You are my ROCK! To my children, Zakary, Hanna and Annie, for your patience and understanding throughout the entire process. To my parents for teaching me to never give up and to have trust in myself. And, to my loyal canine, Skyler for never leaving my side. And, most of all, I give thanks to my Lord and Savior—I can do all things through Christ who strengthens me, Philippians 4:13.

Table of Contents

Acknowledgements iv

Table of Contents v

List of Tables viii

List of Figures ix

Abstract x

Chapter 1: Introduction 1

Background of the Problem 3

Problem Statement 6

Statement of Purpose 10

Research Question and Hypothesis 11

Significance of the Study 12

Organization of the Remainder of the Study 12

Chapter 2: Literature Review 13

Employee Engagement 13

Defining Engagement 14

Frameworks of Engagement 17

History of Engagement 22

Approaches to Employee Engagement: Other Models 25

Engagement and Related Constructs 27

Antecedents of Employee Engagement 29

Self-Determination Theory 29

Measurements of Self-Determination Theory 33

Employee Empowerment 34
Employee Empowerment and Employee Engagement 39
Employee Engagement and Self-Determination Theory 40
Employee Empowerment and Self-Determination Theory 41
Summary 42
Chapter 3: Methodology 43
Instrument 43
Data Collection Procedures 45
Population 46
Assumptions 47
Data Analysis 47
Measures 49
Summary 54
Chapter 4: Results 55
Characteristics of the Population 55
Descriptive Statistics 55
Construct Measurement Models 55
Testing Hypothesis: The Research Model 59
Chapter 5: Discussion 63
Summary of Study 63
Summary of the Findings 64
Implications of this Study 66
Limitations 67

Recommendations for Additional Research 68

References 80

List of Tables

Table 1. Levels of work engagement by age 5

Table 2. Historical Definitions of Employee engagement 21

Table 3. Self-Determinatin Motivation Continuum 32

Table 4. Deomgraphics 73

Table 5. Descriptive Statistics 74

Table 6. Factor Loadings Employee Empowerment 75

Table 7. Goodness of Fit Measurements Employee Empowerment 75

Table 8. Factor Loadings Self-Determination 76

Table 9. Goodness of Fit Measurements Self-Determination 76

Table 10. Factor Loadings Employee Engagement 77

Table 11. Goodness of Fit Model Statistics Employee Engagement 77

Table 12. Mediation and Alternative Model Goodness of Fit Measurements 78

Table 13. Mediation Model Models with Direct and Indirect Effects 78

List of Figures

Figure 1. Comparison of Antecedents to Engagement 8

Figure 2. Hypothesized Research Model 11

Figure 3. Measurements 70

Figure 4. Model Diagrams 71

Figure 5. Hypothesized Model with Latent Variables 72

Figure 6. Hypothesized Model and Alternative Model Direct and Indirect Effects 79

Abstract

Even though employee engagement has been touted as a strategy to increase organizational performance, productivity, and employee retention, scant empirical data on the drivers of employee engagement exists. The current study used secondary data from the Federal Employee Viewpoint Survey (FEVS) to examine the perceptions of employees at the Centers for Disease Control and Prevention (CDC) regarding employee empowerment practices performed by their managers, satisfaction of their basic psychological needs (relatedness, competence, autonomy) and employee engagement. A rigorous psychometric assessment of the variables for each construct was performed using Structural Equation Modeling (SEM). Bifactor-CFA models accounting for both general and specific factors were applied to examine the direct and indirect effects of the relationships between employee empowerment practices, basic psychological needs, and employee engagement. The results were significant, suggesting there is a direct relationship between employee empowerment practices and employee engagement and basic psychological need fulfillment and employee engagement. Additionally, the results indicated a partial mediation between basic psychological needs and employee engagement when employee empowerment practices were introduced.

Chapter 1: Introduction

A CEO of a large corporation was asked how many people *work* in his company. He replied, "About half of them."

Nearly half of all Americans in the workforce are disengaged or not fully engaged, costing United States business leaders $450 billion annually in lost productivity (Sorenson & Garman, 2013). The number increased when workplace injuries, illnesses, turnovers, absences, and fraud by unengaged employees occurred, indicating a loss of more than $1 trillion annually or a loss of 10% of the U.S. gross domestic product (GDP; Gallup, 2014). Thus, engagement is an essential matter of concern for leaders and managers worldwide.

Employee engagement has become a widely used and popular term (Robinson, Perryman, & Hayday, 2004). Generally, employee engagement has been defined as, "a sense of purpose and commitment employees feel toward their employer and one's motivation and ability to contribute to an organization's success" (Schaufeli & Bakker, 2004, p.72). Unmistakable evidence existed among a multitude of studies that within organizations with high levels of employee satisfaction and commitment, leaders can expect to improve their business performance significantly and are more likely to retain employees than companies with dissatisfied, less-engaged employees (Schaufeli & Salanova, 2006; Trahant, 2009). Engaged employees perform with passion and have a profound attachment to their organizations (Kular, Gatenby, Rees, Soane, & Truss, 2008). Engaged employees are more likely to go the extra mile and deliver excellent on-the-job performance (Meere, 2005). Moreover, leaders who successfully develop engaged employees experience fewer accidents, less absenteeism, and reduced turnover in the workplace (Wagner & Harter, 2006).

Practitioners and consultants have studied the outcomes of an engaged workforce. In their study, Salanova, Agut, and Peiro (2005) found engaged employees produced a more effective service climate, based on customer ratings that, in turn, increased employee performance and customer loyalty. At Blessing-White (2008), a global consulting firm, officials reported that by increasing employee engagement by 1/10th of a point, using a 5-point rating, leaders at the electronics retailer, Best Buy, increased store-level sales by $100,000 over the course of 1 year. In another study, Ott (2007) found that organizations with more than four engaged employees for every one actively disengaged employee had 2.6 times more growth in higher earnings per share (EPS) than did organizations with a ratio of slightly less than one engaged worker for every one actively disengaged employee.

Robertson and Cooper (2009) pointed out that employee engagement is important not only because of the effects on organizational outcomes, but because it has a positive influence on the psychological well-being of employees. Psychological well-being at work is the degree that employees experience positive emotions, leading them to experience meaning and purpose in their work (Robertson & Cooper, 2009). Researchers suggested that employees who experience psychological well-being at work experience enhanced performance and job satisfaction (Wright & Cropanzana, 2000).

Employee engagement, a work motivation construct developed by Kahn (1990), has gained considerable popularity over the past 20 years and continues to be a common topic in the business, management, industrial/organizational psychology, and human resources development (HRD) fields. The momentum of engagement has been described as one of the most significant management concepts of the modern age. Over the last decade, more

750,000 studies have been conducted regarding the evidence of engagement (Bailey, C., Madden, A., Alfes, K., & Fletcher, L. (2015).

While much has been written on engagement, scant rigorous academic and empirical research has been conducted, and engagement continues to be defined and conceptualized inconsistently (Shuck & Wollard, 2010). Although researchers have made progress in exploring the consequences of engagement (Shuck, Reio, & Rocco, 2011), a review of the literature indicated that the complex process by which employees' engage in the workplace has not been fully explored. The gap has resulted in a disjointed approach to understanding and developing strategies regarding employee engagement within public and private sector organizations (Leeds & Nierle, 2014).

More attention is needed to determine the enablers of employee engagement. The purpose of the current study was to introduce a framework that can be used to explain the antecedents of employee engagement.

Background of the Problem

Employee engagement has been on the decline (Gallup, 2016). Currently, a deepening disengagement exists among federal employees (Bates, 2004). Researchers at Quantum Workplace (2016), an engagement research organization, showed industries with the largest numbers of engaged employees were in construction (73%) and technology (70%), while industries with the fewest engaged employees included finance and insurance (64%), academia/higher education (60%), and the government at 57%. Ander and Swift (2014) found that engagement levels decreased slightly as workforce sizes increased, with a 32% engagement score from organizations of 1 to 999 employees and a 25% engagement score for firms with more than 10,000 employees.

Employee engagement is particularly important within federal agencies, where employees influence the well-being and safety of the public in many ways, such as conducting advanced scientific research, verifying and administering benefits, or ensuring the safety of workplaces, airports, and national borders (Government Accountability Office [GAO], 2015). Quantum Workplace (2016) researchers found government employees were among the least engaged employees. Experts at the Government Accountability Office (2015) found in a government-wide study that engagement declined 4 percentage points from an estimated 67% in 2011 to 63% in 2014.

Researchers at GAO (2015) reported that employees' perceptions of leaders consistently received the lowest score across the government and continued to be the reason for the largest decline since 2011. Additionally, the GAO (2015) study suggested that up until 2011, intrinsic work experience was the strongest component on the survey, but those scores have continued to decline government-wide.

According to Gallup News (2014), actively disengaged federal employees translated into an 11% loss in productivity across the government, which indicated that nearly $9,000 of the average $78,467 employee salary was not producing benefits for the agency or members of the public. Gallup News (2014) researchers reported that engagement levels differed between the federal and nonfederal workforce when compared by age group. Within the federal government, members of each age group were less engaged than their counterparts outside the federal government, with the widest gap among older workers (Gallup News, 2014). Engagement increased with age in both sectors until the ages of 51 to 60, when it declined slightly (Gallup News, 2014). Furthermore, Gallup (2014) reported that engagement levels improved somewhat among individuals aged 61 and older in the

federal government, but increased significantly for individuals outside the government (see Table 1).

Table 1. Levels of Worker Engagement, by Age
Note: Adapted from "U. S. Federal Employees Less Engaged Than the Rest," by Gallup News, 2014.

Levels of Worker Engagement, by Age

	% Federal Workers	% All Other Workers
Younger than 30	25	28
31-40	27	32
41-50	30	33
51-60	27	31
61+	29	39

Copyright 2014 by Gallup News.

The decrease in engagement within the federal government has not been surprising. Currently, public managers find it difficult to keep employees motivated and engaged given the increased workloads and decreased resources, wage freezes, the possibilities of furloughs, and negative public attitudes toward government (Lavigna, 2014).

In recent years, researchers and practitioners have recognized the importance of fostering employee engagement within the federal government. Taylor (2012) found that engaged public sector employees are: (a) twice as likely to stay in their current jobs, (b) two-and-a-half times more likely to feel they can make a difference, and (c) three times as likely to report being satisfied in their jobs.

The 2014 President's Management Agenda emphasized the need to develop and sustain an engaged, innovative, and productive federal workforce (Office of Personnel Management, 2014). The 2014 President's Management Agenda was the first time that officials in the executive office made such a clear connection between government

performance and the factors that drive the motivation and effectiveness of frontline government employees (Jacobson, 2016).

According to officials at the Office of Personnel Management (2015), more than one-third of federal employees on-board as of 2015 will be eligible to retire by 2020, with the average retirement age of 61 years old. The combination of employees' poor perceptions of their leaders and low levels of intrinsic work satisfaction (GAO, 2015), the cost of lost production to taxpayers, and the potential for high attrition over the next 5 years (OPM, 2015), offers insight into the need to change the way organizations operationalize employee engagement in the workplace. The current study was used to analyze the causes or antecedents of employee engagement at a government organization, specifically the Centers for Disease Control and Prevention (CDC).

Problem Statement

Researchers know very little regarding the antecedents of employee engagement (Bailey, Madden, Alfes, & Fletcher, 2015; Saks, 2006; Wollard & Shuck, 2011). The existing empirical evidence indicated that the presence of high levels of employee engagement influenced job performance, productivity, customer service, and retention, and having a highly engaged workforce is akin to having high-functioning, high-performing employees who exhibit a positive attitude toward work (Christian, Garza, & Slaughter, (2011; Flemming & Asplund, (2007; Rich, LePine, & Crawford, 2010,). With the many desired consequential outcomes that are vital to the financial success of an organization, it seems clear that investigation of the antecedents of employee engagement is critical.

While much of the focus has been on the outcomes of a highly engaged workforce, the literature indicated that antecedents to employee engagement should be in place before

organizational leaders can realize the benefits of an engaged workforce (Rich et al., 2010; Saks, 2006). Wollard and Shuck (2011) provided the most comprehensive overview of employee engagement antecedent research. Wollard and Shuck (2011) defined an antecedent as "constructs, strategies, or conditions that precede the development of employee engagement and that come before an organization benefits from engagement-related outputs" (p. 432). In their comprehensive structural literature review, Wollard and Shuck (2011) encountered a widely cited body of literature covering 42 engagement antecedents that varied in reliability and rigor, with less than half found to be empirically tested. The framework by Wollard and Shuck (2011) provided an extensive taxonomy for unearthing engagement antecedents, but it did not provide an exhaustive list of antecedent possibilities (see Figure 1). Furthermore, based on the extensive research by Wollard and Shuck (2011), a gap clearly exists in the literature, specifically regarding empowerment as an organizational antecedent of employee engagement and employee motivation as an individual antecedent to engagement.

Individual Antecedents to Employee Engagement	Organizational Antecedents to Employee Engagement
Absorption[a]	Authentic corporate culture[a]
Available to engage	Clear expectations[a]
Coping style	Corporate social responsibility[a]
Curiosity	Encouragement
Dedication[a]	Feedback
Emotional fit	Hygiene factors
Employee motivation	Job characteristics[a]
Employee/work/family status	Job control
Feelings of choice & control	Job fit[a]
Higher levels of corporate citizenship[a]	Leadership
Involvement in meaningful work[a]	Level of task challenge[a]
Link individual and organizational goals[a]	Manager expectations[a]
Optimism	Manager self-efficacy[a]
Perceived organizational support[a]	Mission and vision
Self-esteem, self efficacy	Opportunities for learning
Vigor[a]	Perception of workplace safety[a]
Willingness to direct personal energies	Positive workplace climate[a]
Work/life balance[a]	Rewards[a]
Core self evaluation[a]	Supportive organizational culture[a]
Value Congruence[a]	Talent management
Perceived Organizational Support[a]	Use of strengths[a]

Note: a=empirically tested.

Figure 1. Comparison of individual antecedents to employee engagement to organizational antecedents to employee engagement.

Researchers of empirical studies suggested that employee empowerment is positively related to productivity and performance (Fernandez & Moldogaziev, 2010; Kirkman & Rosen, 1999; Lawler et al., 1995). Spreitzer (1995) argued that employees also benefit from working in an empowered context, because they experience a greater sense of meaning, impact, competence, and self-determination.

Empowerment is considered a relational construct and provides managers a practical tool to engage and motivate their staff to work harder to achieve goals for the organization (Blanchard, Carolos, & Randolph, 2001; Quinn & Spreitzer, 1997; Block, 1987; Yoo, Lemak, & Youngjm, 2006). Researchers confirmed that if individuals with power in organizations shared power, information, resources, and rewards with individuals lacking them, organizations would be more successful (Bowen & Lawler, 1992, 1995).

In addition to the antecedent of empowerment, Wollard and Shuck (2011) recognized employee motivation as an individual level antecedent to employee engagement, but they lacked empirical research. Macey and Schneider (2008), Meyer, Gagne, and Parfyonova (2010), and Weigl, Hormung, Parker, Petru, Glaser, and Angerer

(2010) emphasized the need to understand the construct of engagement using research pertaining to theories of motivation. Specifically, Meyer, Gagne, and Parfyonova (2010) proposed a theoretical model using the emerging psychological theory of self-determination (SDT) that addressed the mechanisms underlying employee engagement.

Self-determination theorists posited for individuals to experience work engagement, they need to feel competent, related, and autonomous (Deci & Ryan, 2000). Gagne and Deci (2005) noted, "Satisfaction of basic psychological needs provides the [required] nutriments for intrinsic motivation" (p. 336). Individuals are likely to internalize their tasks and show high degrees of energy, concentration, and persistence to the level that their needs for competence, relatedness, and autonomy are satisfied (Deci & Ryan, 2000).

In response to the lack of empirically tested antecedents, the current study aimed to identify additional important antecedents of employee engagement. It was important to note that in the current study, the goal was to encounter a relationship between empowerment and motivation based on the literature that was ultimately deductive in design. Furthermore, the theoretical frameworks for the current study were Kahn's three psychological condition theory (competence, relatedness, and autonomy) of personal engagement and Deci and Ryan's (1985) self-determination theory of basic psychological needs (autonomy, relatedness, and competence) satisfaction. The current study was used to examine the following hypothesis: perceived employee empowerment practices (Bowen & Lawler, 1992) and employee engagement was partially mediated by self-determination theory of basic psychological needs. The current study was used to analyze the direct and indirect effects by which employee empowerment practices and satisfaction of the basic

psychological needs influence employee engagement at the Centers for Disease Control and Prevention (CDC).

Statement of Purpose

The purpose of the current study was to develop empirical data to examine a hypothesized employee engagement model by exploring the relationship of perceived employee empowerment practices and self-determination's theory of basic psychological needs. While researchers demonstrated the positive relationship between psychological empowerment and employee engagement (Carson & King, 2005; Schaufeli & Bakker, 2004), to date, few researchers have examined the relationship of perceived employee empowerment practices and employee engagement. Additionally, the literature review showed various studies in which researchers examined the relationship between employee engagement and basic psychological needs (Meyer et al., 2010; Valentin, Valentin, & Nafukho, 2015). However, a gap remained in the literature when considering the two antecedents, employee empowerment practices and basic psychological needs simultaneously, whether in an effort to consider the potential relationship between them or to see if they might be antecedents of employee engagement (Wollard & Shuck, 2011).

The current study was examined in the context of the federal government. Secondary data collected by the U.S. Office of Personal Management (OPM) as part of the federal employee viewpoint survey (FEVS) during 2015 was analyzed in the current study. The FEVS is administered annually by OPM officials to federal agencies to measure employee perceptions about their levels of job satisfaction, leadership effectiveness, workplace inclusion, and employee engagement (Office of Personnel Management, 2015).

Research Question and Hypothesis

The current study began with the basic assumption in the employee engagement research that suggested a causal direction running from employee empowerment practices (EMP) to employee engagement (ENG) and from self-determination's theory basic psychological needs (SDT) to employee engagement.

The main overarching research question guiding the current study was: What is the relationship between the antecedent variables of employee empowerment practices and basic psychological needs with employee engagement? Therefore, the main hypothesis of the current study was the following (see Figure 2).

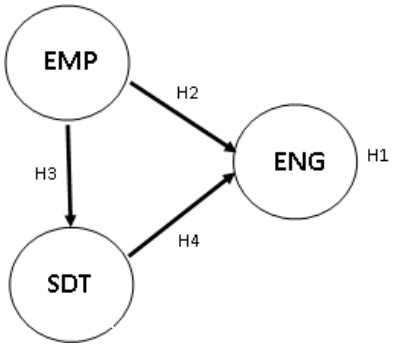


Figure 2. The hypothesized research model. H=Hypothesis; EMP=Perceived employee empowerment practices, SDT=Self-Determination theory, ENG=Employee engagement

Hypothesis 1: Perceived employee empowerment practices and employee engagement will be partially mediated by self-determination theory's basic psychological needs (autonomy, competence, and relatedness).

Other specific hypotheses were tested with the following expectations based on the literature:

Hypothesis 2: Perceived employee empowerment practices will be positively related to employee engagement.

Hypothesis 3: Perceived employee empowerment practices will be positively related to self-determination theory's basic psychological needs (autonomy, competence and relatedness).

Hypothesis 4: SDT's basic psychological needs (autonomy, competence and relatedness) will be positively related to employee engagement.

Significance of the Study

The primary goal of the current study was to help leaders at the CDC improve employee engagement in their organization. Previous researchers suggested that organizations with a highly engaged workforce reported higher retention levels and increased job satisfaction (Shuck & Wollard, 2010). Given that engagement levels were reportedly low across the federal government, examining the antecedents of employee engagement was particularly relevant (Government Accountability Office, 2015). Advanced knowledge of the antecedents of employee engagement, such as perceived employee empowerment practices and self-determination's theory basic psychological needs satisfaction, may offer insight for countering the declining employee engagement trend, an objective of widespread interest for organizations and leaders in both the private and public sectors (Saks, 2006).

Organization of the Remainder of the Study

Chapter 2 provides a literature review regarding the conceptual framework of this study. The research design and methodology is presented in Chapter 3. The results of the current study are compiled in Chapter 4. A summary of the findings with recommendations for future research is presented in Chapter 5.

Chapter 2: Literature Review

In the literature review, three areas of research—engagement, empowerment, and self-determination's theory of basic psychological needs—were examined. The theoretical framework for understanding the construct of employee engagement and the different conceptualizations of the construct were examined first. Next, self-determination theory and employee empowerment were explored. Last, the relationships of employee engagement, empowerment, and self-determination's theory of basic psychological needs were reviewed.

Employee Engagement

The concept of employee engagement has generated enormous interest in both academic and practitioner domains. Macey, Schneider, Barbera, and Young (2009) commented, "Rarely has a term…resonated as strongly with business executives as employee engagement has in recent years" (p. xv). In the release of the book *First Break All the Rules* (Buckingham & Coffman, 1999), the term "employee engagement" became an overnight sensation among experts in the consulting world. Buckingham and Coffman (1999) questioned traditional management styles and found that "great leaders" focused on their strengths daily and were six times more engaged and productive, and enjoyed an excellent quality of life. Based on the new phenomena of employee engagement, consulting firm experts have opportunities to market their own strategies and frameworks to encourage company leaders to survey employees and implement intervention programs to correct any discrepancies (Macey & Schneider, 2008). Despite the dearth of literature regarding employee engagement, the meaning of the term remains conflated with numerous entangled definitions, measurements, and frameworks that are used to draw theoretical

conclusions about the meaning (Shuck, Osam, Zigarmi, & Nimon, 2017). In the next section, a synopsis of the many definitions and meanings of engagement from both the practitioner and academic perspective are provided.

Defining Engagement

While preparing the literature review, it became clear that a unified definition of engagement (Schaufeli, 2012) or employee engagement (Shuck, Tyford, Reio, & Shuck, 2011) was nonexistent. Definitions of engagement vary widely and include defining it as a trait, a state, a set of behaviors, characteristics of the work environment, or a combination of all (Macey & Schneider, 2008). Human resource consultants and practitioners offer definitions compatible with developmental strategies, compared to definitions by academic researchers influenced by their own disciplines and theoretical orientations (Meyer et al., 2010). Despite the lack of a clear and consistent definition of engagement (Macey & Schneider, 2008), a strong belief about the utility of employee engagement exists among academic researchers and practitioners.

Practitioners, such as the Gallup Research Group, defined employee engagement as the individual's involvement and satisfaction with and enthusiasm for work (Harter, Schmidt, & Hayes, 2002). Willis Towers Watson (2012) defined employee engagement as a mutual contract between the organizational leaders and the employees. Leaders of organizations have the responsibility to create a meaningful workplace, and, in return, employees have the responsibility to put discretionary effort into their work in the form of extra time, brainpower, or energy (Willis Towers Watson (2012).

The first contribution to the academic literature on engagement was the seminal work by Kahn (1990; 1992). Kahn (1990) defined personal engagement as "the harnessing

of organizations members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, emotionally, during role performance" (p. 700). Schaufeli, Salanova, Gonzalez-Roma, and Baker (2002) defined engagement as a positive fulfilling work-related state of mind that is characterized by vigor, dedication, and absorption. Robinson, Perryman, and Hayday (2014) defined engagement as one step ahead of commitment. Employee engagement is a positive attitude of employees toward their organizations and its values.

Rothbard (2001) defined engagement as a psychological presence but further stated that engagement involves two critical components: attention and absorption. May, Gilson, and Harter (2004) suggested that engagement pertains to how individuals apply themselves in their work and the active use of emotions and behaviors as cognitions. Shaw (2005) defined employee engagement as the emotional and intellectual commitment by employees to the organization.

Maslach and Leiter (1997) conceptualized engagement as the opposite of burnout: feeling energetic, involved, and effective versus feeling exhausted, cynical, and ineffective in the lens of the person-job fit. Maslach and Leiter (1997) suggested building engagement by promoting sustainable workloads, empowerment, and controlling over work. Based on the controversial definition of engagement, Macey and Schneider (2009) argued that an employee's sense of self (i.e., trait, state, and behavior) is influenced by organizational conditions. Trait engagement indicates that underlying personality traits, such as extroversion, emotional stability, and conscientiousness, could predispose employees to view the world positively, thereby experiencing a state of engagement at work (Maslach & Leiter, 1997). State engagement refers to the feelings of being engaged (disengaged),

depending on the daily circumstances, and engagement conceptualized as a behavior is defined as a discretionary work effort that assumes employees will perform effectively, extraordinarily, and with energy and enthusiasm (Meyer, 2017). Trait-like engagement has been contested by researchers, implying that engagement is a momentary state depicted by the intensity of the energy directed toward the work (Brown & Leigh, Bobko,1996; Kahn, 1990) and not an innate disposition, suggesting engagement is stable across time and context (Macey & Schneider, 2008).

The varied definitions and conceptual differences regarding the construct of employee engagement, coupled with limited empirical research, is concerning, despite decades of use in the literature (Saks & Gruman, 2014; Schaufeli, 2012). Based on the continued confusion in the literature, Shuck, Osam, Zigarmi, and Nimon (2017) challenged much of what was written and operationalized a definition of employee engagement grounded in research. Using a long view of the seminal literature, comparing definitions and engagement types, Shuck et al. (2017) positioned a common meaning and refined the definition of employee engagement as a "positive, active, work-related psychological state operationalized by the maintenances, intensity, and direction of cognitive, emotional, and behavioral energy" (p. 269). Grounded in the personal engagement of Kahn, Shuck et al. (2017) explained that employee engagement is comprised of four principal elements: (a) an active pull; (b) state-based; (c) increased levels of energy preceding the full state; and (d) experiences of the conditions of work that inform the maintenance, direction, and intensity of being engaged.

Frameworks of Engagement

To conceptualize the definitions of engagement fully, it is important to understand the major frameworks of engagement—organizational engagement, job engagement, and work engagement—that are the most commonly used (Shuck et al., 2017). While no established hierarchy of engagement terminology exists (e.g., job engagement, work engagement, and organizational engagement), there is a distinction (Shuck et al., 2017). Shuck et al. (2017) insisted, based on their study, engagement frameworks have an identity crisis. Shuck et al. (2017) argued that the terminology is often used interchangeably within definitions and studies on employee engagement. Furthermore, definitions of engagement are preceded often with one of three modifiers—employee, work, or job—with little to no distinguishing characteristics (Buse & Billimori, 2014).

In an attempt to make sense of the literature, Shuck et al. (2017) performed a two-staged review to identify and classify the literature regarding job engagement, work engagement, and organizational engagement. First, Shuck et al. (2017) used a seminal works audit to identify research studies around the frameworks of engagement. Second, Shuck et al. (2017) applied chain-sampling methodology (Biernacki & Waldorf, 1981) to identify researchers who had been influenced by the identified seminal work. It is important to note that Shuck et al. (2017) were the first known scholars to offer a grounded definition of employee engagement, connecting their definition to other proposed definitions by Shuck and Wollard (2010), Nimon, Shuck, and Zigarmi (2015), and Shuck, Adelson, and Reio (2016). Shuck et al. (2017) operationally defined employee engagement as a "positive, active, work-related psychological state operationalized by the maintenances, intensity, and direction of cognitive, emotional, and behavioral energy" (p. 276).

Nonetheless, the following engagement framework definitions are hopeful definitions to clarify the distinct differences between organizational engagement, job engagement, and work engagement.

Originally defined by Saks (2006), organizational engagement is "the extent to which an individual is psychologically present in a particular organizational role" (p. 604). Shuck et al. (2017) found numerous studies in which researchers specifically used organizational engagement as their framework and focused on hypothesis, but they muddled the construct by suggesting organizational engagement was a state-based framework or characterized as an active pull. Shuck et al (2017) argued that descriptions of organizational engagement shared overlaps with their definition of employee engagement, making the construct even more confusing. Organizational engagement is focused toward an employee's psychological presence with the organization, indicating a much narrower view of the employee engagement construct, making it a less than suitable alternative (Shuck et al., 2016). Shuck et al. (2017) suggested the use of employee engagement literature and other engagement literature was expected in a research study, and argued that clear boundaries must exist regarding the construct that was being defined.

Consistency in the measurement and operationalization of the organizational engagement framework was noted in the research (Saks, 2006). In the studies that were examined regarding organizational engagement, researchers appropriately used the organizational engagement scale by Saks (2006) to measure organizational engagement (Shuck et al., 2017).

Rich, LePine, and Crawford (2010) defined job engagement as a "multidimensional motivational concept reflecting the simultaneous investment of an individual's physical,

cognitive, and emotional energy in active, full time work performance" (p. 6). The framework was used to address distinct characteristics of job engagement, specifically the focus of energy for active, full work performance toward the job (Shuck et al., 2017). The definition provided a narrow focus with descriptors of how job engagement should be defined within the context of work (Shuck et al., 2017). However, more than half of the studies reviewed by Shuck et al. (2017) regarding job engagement used Schaufeli and colleagues' Utrecht Work Engagement scale (UWES) or some variation of operationalizing job engagement (Shuck et al., 2017). Interestingly, experts have criticized the UWES for its inability to distinguish empirically between low engagement and burnout. Further, the criticism comes from the lack of distinctiveness from the Maslach burnout inventory (MBI; Byrne, 2016).

The influence of Schaufeli and colleagues' work engagement model on research based on job engagement has caused serious challenges for the construct of job engagement. The elements of work engagement noted by Schaufeli and colleagues were distinctively defined and were different from job engagement (Shuck et al., 2017). The confusion forced Rich et al. (2010) to diverge from Schaufeli and instead ground their work on Kahn's (1990) original conceptualization of personal engagement (Shuck et al., 2011). Rich et al. (2010) presented a psychometrically well-grounded robust measure of job engagement scale, (Job Engagement Scale, JES; 6-item engagement scale) to operationalize the construct, yet researchers continue to ground their definitions of job engagement within the work engagement framework and measure it with the UWES.

Schaufeli et al. (2002) defined work engagement as a "positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption" (p.72). Shuck et

al. (2017) reported that while organizational engagement and job engagement have endured conceptual entangling, work engagement has not endured. Bakker, Schaufeli, Leiter, and Taris (2008) cited that the original research on work engagement, as appropriately measured by the UWES, was a separate framework of engagement. The literature showed that nearly every study on work engagement was characterized overwhelmingly as vigor, dedication, and absorption, indicating that the original works by Schaufeli et al. (2002) formed an accepted foundation of the work engagement framework. The relatively consistent measurement of the UWES developed by Schaufeli et al. (2002) was found to be the most widely used and reliable scale to operationalize work engagement (Alarcon & Lyons, 2011).

Shuck et al. (2017) concluded that a stark difference existed in engagement frameworks, and the overlap among conceptualization in the literature created the continued confusion by both practitioners and scholars. Shuck et al. (2017) offered clarity to the engagement frameworks in (see Table 2) by outlining the framework, the definition as identified by the seminal work, and a root seminal citation. Shuck et al. (2017) argued it was critical for researchers, when studying engagement, to choose a specific engagement framework and stay within that theoretical strand. An example of not doing so would be using Schaufeli' s definition, the framework from Shuck et al. (2011), and the JES from Rich et al. (2010) as the measurement.

Table 2.

Historical Definitions of Engagement Types.

Type	Definition	Citation
Engagement	"An active psychological state." (p. 61)	Parker and Griffin (2011)
Employee engagement	"An individual employee's cognitive, emotional, and behavioral state directed toward desired organizational outcomes." (p. 103)	Shuck and Wollard (2010)
Job engagement	"Multi-dimensional motivational concept reflecting the simultaneous investment of an individual's physical, cognitive, and emotional energy in active, full work performance." (p. 619)	Rich, Lepine, and Crawford (2010)
Personal engagement	"Simultaneous employment and expression of a person's 'preferred self' in task behaviors that promote connections to work and to others, personal presence, and active full role performances." (p. 700)	Kahn (1990)
Organizational engagement	"The extent to which an individual is psychologically present in a particular organizational role." (p. 604)	Saks (2006)
Work engagement	"A positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption." (p. 74)	Schaufeli, Salanova, González-Romá, and Bakker (2002)
Collective organizational engagement	"Shared perceptions of organizational members that members of the organization are, as a whole, physically, cognitively and emotionally invested in their work." (p. 8)	Barrick, Thurgood, Smith, and Courtright (2015)

Note. Adapted from "Definitional and Conceptual Muddling: Identifying the Positionality of Employee Engagement and Defining the Construct," by B. Shuck, K. Osam, D. Zigarmi, and K. Nimon, 2017, *Human Resource Development Review, 16*(3), p. 270.

Engagement frameworks and measures have been scrutinized. Comparing different measures for the same construct is common practice in the scholarly literature (Ilgen Nebeker, & Pritchard, 1981). Conclusions about engagement for both practice and science are useless if the measurement construct is considered indistinguishable from other construct measures (Ilgen et al, 1981). Researchers only now are beginning to advance the conversation regarding what is engagement and how it should be measured (Byrne, Peters, & Weston, 2016).

Although many definitions and frameworks exist, it was not the intent of the current study to resolve the debate over the best approach. Rather, the intent of the current study was to operationalize Kahn's (1990) personal engagement framework and remain within the theoretical component of the construct. In the next section, the history of engagement will be reviewed.

History of Engagement

Kahn (1990) coined the word personal engagement in his article "Psychological Conditions of Personal Engagement and Disengagement at Work," which appeared in the *Academy of Management Journal*. Kahn (1990) began his research based on the work of the interaction theory by Goffman (1961), who proposed people become attached to their work and then detach from their work, and the attachment-detachment process showed shifts in behavior as people moved in and out of their work roles.

Kahn's theory of attachment-detachment at work provided challenges to traditional motivation studies, because employees are either on or off based on external and intrinsic factors, and they remain in each state for some time (Hackman & Oldham, 1976). Kahn (1992) believed that workers are more complicated and that they make choices about how intently and persistently they bring their real selves into their work roles. Kahn referred to the concept as the allocation of personal resources to role performance and to what degrees and dimensions the resources are applied as various work conditions shift (Kanter,1990).

Further, Kahn (1990) explained that the momentary attachment-detachment occurred when employees chose to express themselves and were psychologically present or they chose to alienate themselves and become psychologically withdrawn (Goffman, 1961; Kahn, 1990). Employees are present psychologically when they feel attentive, connected,

integrated, and focused in their role performance. Kahn (1990) referred to the pulls and pushes as people's calibrations of self-in-role, enabling them to cope with the uncertainties of both internal and external conditions. To explain the calibrations of self-in-role, Kahn (1990) stated that individuals are fully present at work when they are channeling personal energies into physical, emotional, and cognitive efforts. Kahn (1990) explained when employees become *physically* involved in tasks, whether working alone or with others, they are *cognitively* vigilant, focused, and attentive and are *emotionally* connected to their work and their coworkers, they are fully engaged. Kahn (1990) referred to the efforts as self-expression, and when applied during role performance employees displayed a real identity, thoughts, and feelings.

Kahn (1990) emphasized that individuals who are present psychologically are focused fully on the "here-and-now" of their experience. Furthermore, Kahn (1990) noted to be fully present meant that the person was not taken away by the past (memories) or the future (dreams), although both may help guide a person's present actions. Kahn (1990) provided the account of a scuba-diving instructor who was fully engaged, stating, "He employed himself physically, darting about checking gear and leading the expedition; cognitively, in his vigilant awareness of divers, weather, and marina life; and emotionally, in empathizing with the fear and excitement of young divers" (p. 700). Kahn (1990) noted when employees exercised the personally engaging behaviors simultaneously they brought self-in-role alive. Although the experience exemplified a fully engaged individual, Kahn (1990) noted that it was possible to be high in one dimension (e.g., cognitive engagement) and not another (e.g., physical engagement).

Conversely, Kahn (1990) defined personal disengagement as the simultaneous withdrawal of an employee's preferred self and the absence of a physical, cognitive, or emotional connection in role performances. Often, disengaged employees are described as being only physically present at work, being detached and robotic in conducting their work (Fleck & Inceoglu, 2010).

To empirically test his theory, Kahn (1990) undertook a qualitative study on the psychological conditions of personal engagement and disengagement at work by interviewing and collecting data from summer camp counselors and staff at an architectural firm. Kahn (1990) focused on how people's experiences of themselves and their work contexts influenced moments of personal engagement and disengagement. Kahn (1990) analyzed conditions of each reported moment of engagement and identified what psychological conditions attributed to attitudes and behaviors of people and the factors that influenced their experiences at work. Kahn (1990) noted that three psychological conditions are associated with employees' engagement or disengagement at work: meaningfulness, safety, and availability. Kahn (1990) found that people asked themselves three fundamental questions in each role situation: (a) How *meaningful* is it for me to bring myself into this performance? (b) How *safe* is it to do so? and (c) How *available* am I to do so?

Kahn (1990) described psychological meaningfulness as, "the sense of return on investments of the self-in-role performances" (p. 708). Meaningfulness referred to feelings a person's work was worthwhile and valued by the organization leaders or by the supervisor; therefore, linking the employee's values with the organizations values (Kahn, 1990). Many researchers have recognized meaningfulness as a critical condition of work,

as it has a substantive impact on employee outcomes (Fairle, 2011, Kahn, 1990, May et al., 2004). Matuska and Christiansen (2008) found meaningfulness is important for resilience under stressful conditions; it relates to external goals and self-transcendence (Vella-Brodric, Park, Peterson, 2009).

Kahn (1990) defined experiences of psychological safety as "the sense of being able to show and employ one's self without fear of negative consequences to self-image, status, or career" (p. 708). Individuals who feel safe try novel ways of doing role-related tasks and are more likely to take risks that express their true selves (Amabile & Hogan, 1982). Perceptions of social systems related to interpersonal relationships, connectedness to others, and supportive management are important aspects of psychological safety (Kahn, 1990).

Psychological availability is described as "the sense of possessing the physical, emotional, and psychological resources necessary" (Kahn, 1990, p. 705). In essence, availability refers to a person's self-perceptions of confidence and self-consciousness, allowing him or her to engage at work. Availability is used to reflect the degree of freedom from non-work distractions that would prevent a person from fully expressing self at work (Byrne et al., 2016).

The results of Kahn's study (1990) indicated organizational members who are engaged personally (cognitively and/or emotionally) when the conditions of psychological meaningfulness, safety, and availability are present are more satisfied and more productive employees. The next section is used to examine other approaches to employee engagement.

Approaches to Employee Engagement: Other Models

Although many studies of engagement have been conducted, May et al. (2004) were the only researchers to empirically test Kahn's (1990) model. May et al. (2004)

operationalized their study using survey questions from the job diagnostic survey (JDR) developed by Hackman and Oldham (1980). Employees from a large Midwestern insurance firm (N = 203) were surveyed, and the results indicated that all 3 psychological conditions significantly related to individuals' engagement at work: meaningfulness (r = 0.63), availability (r = 0.29), and safety (r = 0.45). Furthermore, May et al. (2004) expanded on Kahn's model by including predictors of engagement. May et al. (2004) noted job enrichment (r = 0.35) and role fit (r = 0.54) were positive predictors of psychological meaningfulness; coworker relations (r = 0.11) and supportive supervisor relations (r = 0.55) were positive predictors of psychological safety; and available resources (r = 0.64) were a positive predictor of psychological availability (May et al., 2004). Although neither Kahn (1990) nor May et al. (2004) included outcomes in their studies, Kahn (1992) proposed that engagement leads to a better quality of employees work experiences and positive consequences for organizations.

Maslach, Schaufeli, and Leiter (2001) developed a model of employee engagement based on the burnout literature. Burnout was theorized to be the erosion of engagement (Maslach et al., 2001) and what was once important, meaningful, and challenging work became unpleasant, unfulfilling, and meaningless (Maslach et al., 2001). Maslach et al. (2001) suggested that job engagement was associated with six domains: (a) a workload that is sustained, (b) feelings of control, (c) appropriate rewards and recognition, (d) a positive and supportive work environment, (e) fair and equitable treatment, and (f) work that is meaningful and valued by the organization (p. 24). The Maslach burnout inventory general survey (MBI-GS; Maslach & Leiter, 1997) was developed to measure burnout and engagement. Engagement was operationalized and assessed by the opposite pattern of the

scores on the MBI, because it was thought that a person who was not experiencing burnout must be engaged (Maslach et al, 2001).

While Maslach et al. (2001) considered burnout and engagement to be at opposite ends of the same state, Schaufeli et al. (2002) noted that burnout and engagement were independently, negatively correlated states of mind and could not be measured adequately by the opposite profile on the MBI. Schaufeli et al. (2002) defined engagement as a positive, fulfilling work-related state of mind that is composed of three components: vigor, dedication, and absorption. *Vigor* involves high levels of energy and mental resilience while working; *dedication* refers to a person being strongly involved in his or her work and experiencing a sense of significance, enthusiasm, and challenge; and *absorption* refers to being fully concentrated and engrossed in one's work (Schaufeli, Salanova, Gonzalez-Roma, & Baker, 2002).

Schaufeli et al. (2002) tested Maslach's framework (Maslach & Leiter, 1997; Maslach et al., 2001), suggesting burnout and engagement were on opposite poles using the MBI. Schaufeli et al. (2002) surveyed 314 Spanish university students and 619 Spanish employees from private and public companies ($N = 933$). Based on the results of their research, Schaufeli et al. (2002) suggested a negative relation between burnout and work engagement ($r = 0.46$ and $r = 0.61$, respectively).

Engagement and Related Constructs

One theme apparent in the literature was the overlap between other known established constructs such as job involvement and organizational commitment. To test the assumption, Hallberg and Schaufeli (2006), in an empirical investigation of the different constructs, provided evidence that engagement was clearly a distinct and separate construct

from job involvement and organizational commitment. Data collected from consultants at a communications technology firm (N = 186) was used to test the latent intercorrelations between the constructs (Hallberg & Schaufeli, 2006). In the study, measured by the UWES, Hallberg and Schaufeli (2006) reported the range between the three constructs as 0.35 and 0.46, respectively, indicating between 12% and 21% of shared variance, respectively, which supported the assumption that the constructs were related but did not overlap to the extent where redundancy was actualized. Hallberg and Schaufeli (2006) performed a confirmatory factor analysis (CFA) to test whether engagement, job involvement, and organizational commitment could be empirically separated. The CFA was used to support the assumption, indicating that the model specifying engagement, job involvement, and organizational commitment resulted in both the absolute and comparative fit measures for the three-dimensional model to be the superior model as compared to a one-dimensional model (Hallberg & Schaufeli, (2006).

Academic researchers have agreed with the results of Hallberg and Schaufeli (2006) and further provided additional explanations related to the constructs. First, Saks (2006) noted that organizational commitment differed from engagement in that it referred to an employee's attitude and attachment toward the organization. Engagement is not an attitude. Saks (2006) explained that engagement is the degree to which an individual is attentive and absorbed in the performance of his or her role.

Engagement also differed from job involvement. May et al. (2004) noted that job involvement was the result of a cognitive judgment about the need-satisfying abilities of the job and was linked to an individual's self-image, which was in direct contrast, because engagement involves how individuals employ themselves in the performance of their job.

Furthermore, Saks (2006) noted that engagement involved the active use of behaviors in addition to cognitions and could be considered an antecedent of job involvement.

Although both models by Kahn (1990) and Maslach et al. (2001) indicated the psychological conditions necessary for engagement, the models cannot be used to fully explain why individuals will respond to the conditions with varying degrees of engagement. A stronger theoretical rationale for explaining employee engagement can be found in self-determination theories of basic psychological needs: autonomy, relatedness, and competence (Meyer & Gagne, 2008).

Antecedents of Employee Engagement

Despite the benefits shown by employee engagement, few researchers have investigated its antecedents (May et al., 2002; Saks, 2006). The following section will be used to discuss the antecedents of self-determination and employee empowerment.

Self-Determination Theory

Self-determination theory (SDT) is a multidimensional theory of motivation. Motivation is viewed as the interplay between internal states and external factors influencing the states. Theorists of STD explain motivation using the concept of needs satisfaction. Over several decades, Deci and Ryan (2000) conducted research to identify what they considered an innate set of psychological needs that all humans seek to satisfy. Deci and Ryan (2000) posited that individuals are at their most self-determined in an activity when psychological needs of competence, autonomy, and relatedness can be satisfied. The need for competence is satisfied when people believe they have the feeling of control and mastery over their environment (Deci & Ryan, 2000). The need for autonomy is satisfied when a feeling of volition with a sense of deliberate choice in one's behavior

exists, and the need for relatedness is satisfied when close relationships develop in various life domains (Deci & Ryan, 2000). Proponents of SDT suggested that psychological needs are tested by showing unique relations of each satisfied need with a wide range of positive outcomes (Ryan & Deci, 2008).

The assumption was that satisfied needs support organismic integration processes that bring about psychological thriving and growth, just as plants grow and thrive when their needs for sun, soil, and water are satisfied (Deci & Ryan, 1985). Furthermore, researchers suggested that satisfaction of the three psychological needs is associated with high levels of performance (Kuvass, 2008) adaption to change (Gagne & Deci, 2005) and employee well-being (Deci, Koestner, & Ryan 2001).

Two overarching forms of motivation are recognized in SDT—autonomous motivation and controlled motivation. Deci and Ryan (1985) defined autonomy as behaviors acting with a sense of volition and having the experience of choice. Controlled motivation involves performing an activity with a sense of pressure merely for tangible reasons. Unlike other theoretical approaches to motivation, SDT does not rely on the extrinsic-intrinsic motivation dichotomy; rather it assumes that autonomous and controlled types of motivations can take many forms that are expected to fall along a continuum of self-regulation (Gagne & Deci, 2005). The continuum represents the degree to which the motivation comes from within the person (Gagne & Deci, 2005)

At one extreme of the self-determination continuum is intrinsic motivation, while at the lowest end of the continuum is amotivation (Gagne & Deci, 2005). Between the extremes are four levels of extrinsic motivation that occur when individuals engage in an activity as a means to an end. First, *identified regulation* is recognized as an autonomous

form of extrinsic motivation and occurs when behaviors are accepted, valued, or considered to be personally important. Next, *introjected regulation* is an internalized type of controlled motivation occurring when individuals are driven to act by internal pressures or to avoid guilt or shame. *External regulation* occurs when individuals adopt a behavior to obtain an externally controlled reward or to avoid punishment. Last, *amotivation* involves the lowest form of self-determination when a person lacks intention or is not conscious of why he or she is doing an activity (Deci & Ryan, 2000; Ryan & Deci, 2017). Further, self-determined forms of motivation include intrinsic motivation as well as the integrated and identified regulations. Behaviors that are not chosen, but stem from external pressures are not self-determined and include introjected and external regulations as well as amotivation (Deci & Ryan, 2000). People will experience varied forms of action regulation based on the source of motivation being intrinsic or extrinsic (Ryan & Deci, 2000). Table 3 shows the self-determination motivation continuum.

Although, extrinsic and intrinsic motivation are positioned at opposite ends of the continuum, there is some agreement among researchers that these types of motivation are not necessarily negatively opposed (Amiot, Gaudreau, & Blanchard, 2004; Gagne & Deci, 2005).

Table 3.

Self-Determination Motivation Continuum

Amotivation	**Extrinsic motivation**				**Intrinsic motivation**
	External regulation	Introjected regulation	Identified regulation	Integrated regulation	
Absence of intentional regulation	Contingencies of reward and punishment	Self-worth contingent on performance; ego-involvement	Importance of goals, values and regulations to the individual	Coherence of goals, values and regulations within the individual	Interest and enjoyment of the task
Lack of motivation	Controlled motivation	Moderately controlled motivation	Moderately autonomous motivation	Autonomous motivation	Inherently autonomous motivation

Note. Adapted from "Self-Determination Theory and Work Motivation," by M. Gagné and E. L. Deci, 2005, *Journal of Organizational Behavior, 26*, 362.

Numerous empirical studies provide evidence that public sector employees are motivated by the need for achievement and they place higher values on intrinsic rewards than extrinsic rewards. Further, public sector employees assign an equal value to earnings or other extrinsic rewards as compared to private sector employees (Lyons, Duxbury, and Higgins, 2006). The idea that tangible rewards undermine intrinsic motivation created controversy among researchers. Based on a comprehensive meta-analysis of 128 empirical studies, Deci et al. (1999) confirmed that tangible extrinsic rewards significantly decreased intrinsic motivation for the rewarded activity. Furthermore, in a meta-analysis on positive feedback from managers, Henderlong and Lepper (2002) confirmed that positive feedback enhanced intrinsic motivation. The essential findings from the meta-analysis indicated that tangible rewards decreased intrinsic motivation, particularly if the rewards were contingent on doing the activity, expected when doing it, and salient (Deci, et al., 1999). Furthermore, Ryan, Mims, and Koestner (1982) showed when monetary rewards were made performance-contingent (given to top performers) and were administered with an

autonomy-supportive interpersonal style, the subsequent level of intrinsic motivation was higher than that for participants who did not receive an award, despite the recognition that their performance was excellent. In the study by Ryan, Mims, and Koestner (1982), employees who were told with an autonomy-supportive style that they would not receive a monetary award showed a level of intrinsic motivation at the same level of employees who received the award.

Numerous studies have been conducted using the SDT framework to examine the relations of need satisfaction to workplace well-being and performance (Lynch, Plant, & Ryan, 2005; Ryan, Bernsetian & Brown, 2010). Ilardi, Leone, Kasser, and Ryan (1993) conducted a regression analysis examining 100 workers and supervisors employed in a manufacturing plant. In their findings, Ilardi et al. (1993) confirmed that employees who reported greater need satisfaction when at work also reported greater job satisfaction and higher feelings of self-esteem and lower levels of psychosomatic symptoms after controlling for job status and pay. Furthermore, when their managers rated the employees' feelings of need satisfaction, the ratings also predicted the same work outcomes that were predicted by the employees' ratings (Ilardi et al., 1993).

Measurements of Self-Determination Theory

In the academic literature, the first scale developed to measure distinct regulation types was the self-regulated questionnaire (SQR) developed by Ryan and Connell (1989). Subsequent researchers have strongly supported the existence of the distinct types of motivation with the validation of several measures intended for use in specific life domains, such as the academic motivation scale (AMS; Vallerand et al., 1992), the multidimensional work motivation scale (MWMS; Gagne et al., 2015), the behavioral regulations in exercise

questionnaire (BREQ), and the behavioral regulation in sport questionnaire (BRSQ), respectively. Factor structures of the scales have been validated repeatedly across multiple domains, countries, and languages (Gagne, Deci & Ryan, 2017).

Several caveats have been found for each of the measurements, such as including integrated regulations, because it has proven challenging to create a subscale that is distinguishable from the identified regulations and intrinsic regulations (Howard, Gagne, & Bureau, 2017). Regardless of the differences, developers of all of the scales claim to follow a simplex ordering of subscales as is required by the continuum assumptions of motivation within SDT (Howard et al., 2017).

Employee Empowerment

A growing body of literature indicated that an empowered workforce will lead to achieving a competitive advantage (Conger & Kanungo, 1998; Forrester, 2000; Quinn & Spreitzer, 1997). Employee empowerment programs have been found to improve service quality, promote innovation, and increase customer satisfaction (Bowen & Lawler, 1992, 1995; Conger & Kanungo, 1988). The academic literature provided evidence pointing to the efficacy of employee empowerment as improving work outcomes and work-related attitudes in both the public and private sectors (Fernandez & Moldogaziev, 2015; Guthrie, 2001; Kirkman & Rosen, 1999).

The public management paradigm has been changing based on the growing popularity of new public management (NPM). The emphasis of NPM is to move away from hierarchy, reduce the bureaucracy, and aim to improve efficiency and performance. The approach has been used to focus on outputs rather than inputs, and is in line with "managing through influence" (Kaymakçı & Babacan, 2014). Based on the NPM,

employee empowerment programs are being introduced in government organizations across the United States, Canada, and Europe aimed at improving organizational performance (Fernandez & Moldogaziev, 2013). The success of public organizations is dependent largely on modern methods and tools used by human resource managers (HRM), suggesting that employee empowerment can be an effective strategy to enhance the transformation and reduce the bureaucracy in public organizations (Cho, Laschinger, & Wong, 2006).

Although the literature indicated the benefits of an empowered workforce, definitions of employee empowerment vary among scholars (Conger & Kanungo, 1998; Thomas & Velthouse, 1990). The concept of employee empowerment dates to the human relations movement, with prominent researchers discussing the importance of empowering employees to create a fulfilling and productive work environment. However, it was not until the late 1980s that empowerment programs became a popular innovation in the private sector (Bowen & Lawler, 1992). Theories such as participative management and employee involvement are used as the theoretical underpinning of employee empowerment (Thomas & Velthouse, 1990). Participative management experts advocate that managers share decision-making power with employees to enhance performance and work satisfaction (Cotton, Vollrath, Froggatt, Lengnick-Hall, & Jennings, 1988). In theories of employee involvement, proponents emphasized cascading power, information, rewards, and training to the lowest level possible in the organizational hierarchy to increase worker discretion (Bowen & Lawler, 1992).

Theorists and practitioners discussed the concepts of empowerment from two distinct theoretical perspectives, a psychological state and a managerial approach. From a psychological state, empowerment indicates the viewpoint of the follower—empowerment

is the perception of being empowered, the internal cognitive state of mind that a person believes strongly in his or her abilities to perform a task (Fernandez & Moldogaziev, 2015).

Rooted in Vroom (1964) and Lawler's (1970) expectancy theory of motivation, Conger and Kanungo (1988) argued that a person's motivation to exert more effort is based on the desired level of performance expectancy. Conger and Kanungo (1988) suggested that as levels of empowerment increased, a person's self-efficacy expectations are enhanced, thereby increasing the amount of effort dedicated to performing a job. Thomas and Velthouse (1990) defined empowerment as a heightened level of intrinsic task motivation that comes from making a task meaningful, identifying with it, and finding expressive value in it. Furthermore, Thomas and Velthouse (1990) stated that four personal assessments of a task will be used to influence intrinsic task motivation positively: (a) impact, (b) competence, (c) meaningfulness, and (d) choice. Thus, employees who use the four personal assessments will find intrinsic task motivation to be positive the more they become empowered (Fernandez & Moldogaziev, 2012). Spreitzer (1995,) noted that employee empowerment is a four-dimensional motivational construct, composed of four cognitions: (a) meaning, (b) competence, (c) self-determination, and (d) impact. Spreitzer (1995, 1996) suggested that the cognitions were an active, rather than passive, orientation at work.

Employee empowerment described as managerial behavior has been used to suggest a set of activities and practices of managers that give power, control, and authority to subordinates, while holding them responsible for their job outcomes, thereby leading to more productivity and higher job satisfaction (Bennis & Nanus, 1985). Importantly, company leaders do not make this happen. Measurement of empowering practices is the

role of the manager (Bowen & Lawler, 1992). The manager must create a work environment that is rewarding and encouraging, expressive of confidence, and fosters initiative and responsibility (Niehoff, Moorman, Blakely, & Fuller, 2001). Kanter (1979) described managerial empowerment as a process in which managers provide employees with access to three sources of power: (a) lines of supply to essential resources, (b) lines of information and feedback, and (c) discretion to engage in innovation behavior.

Ahearne, Mathieu, and Rapp (2005) defined employee empowerment as multidimensional and suggested that employee empowerment was a leadership approach or style. Employee empowerment involves leadership behaviors that enhance the meaningfulness of work, foster participation in decision making, express confidence in high performance, and provide autonomy from bureaucratic constraints (Kim & Fernandez, 2015). Arnold, Arad, Rhoades, and Drasgow (2000) described empowerment as the following leadership behaviors: (a) leading by example, (b) involving others in decision-making, (c) coaching, (d) informing, and (e) showing concern for others.

Bowen and Lawler (1992, 1995) developed one of the most recognized conceptualizations of managerial employee empowerment. Bowen and Lawler (1992) defined employee empowerment as a multifaceted approach to service delivery, where managers share with their employees the following four organizational ingredients: "(1) information about the organization's performance, (2) rewards based on the organization's performance, (3) knowledge that enables employees to understand and contribute to organizational performance, and (4) power to make decisions that influence organizational direction and performance" (p. 32). Scholars noted that the four organizational ingredients interacted with each other to produce a multiplicative effect on performance (Bowen &

Lawler, 1992, 1995). The definition by Bowen and Lawler (1992, 1995) dated to the seminal contributions of the human relations movement in organizational theory offered by Likert (1967) and McGregor (1960). Until the 1990s, managers equated employee empowerment with delegating and sharing decision-making authority with frontline employees using various participative techniques (Kanter, 1979). Based on their own observations and research, Bowen and Lawler (1992, 1995) recognized that empowerment was not based only on the delegation of power, but it required redistribution of information, knowledge, and rewards to obtain the positive outcomes of empowerment.

Definitions of empowerment abound with a common theme that links individual well-being with the larger social and political environment and goes beyond the traditional psychological constructs of self-esteem, self-efficacy, and locus of control (Fernandez & Maldogaziev, 2015). Seibert et al. (2004) demonstrated that managerial empowerment practices were empirically and conceptually distinct from psychological empowerment. Additionally, Seibert et al. (2004) suggested that managerial empowerment practices were related positively to employee psychological empowerment. Therefore, Seibert et al. (2004) stated that managerial behaviors have a role in employees' sense of psychological empowerment. Fernandez and Maldogaziev (2015) suggested that empowerment may be best understood as a process involving a set of managerial practices (sharing authority, resources, information, and rewards) that influence performance (effort, productivity) not only directly, but indirectly, through their influence on employee cognition (self-efficacy, motivation, and job satisfaction).

The two constructs of employee empowerment—psychological and managerial—represent qualitatively different phenomena. Quinn and Spreitzer (1997) suggested that one

perspective of empowerment is not necessarily better than the other. The most widely cited form of employee empowerment studied in the literature was that of when higher levels within a hierarchy share power with lower levels within the same hierarchy (Siegall & Gardner, 2000; Quinn & Spreitzer, 1997). Furthermore, when leaders are effective in using empowering behaviors, employees are aware of the expectations placed upon them, and they feel confident in achieving them; consequently, employees experience higher levels of engagement (Laschinger, Wilk, Cho, Greco, 2006).

Bowen and Lawler's (1992) four-dimensional conceptualization of employee empowerment as a managerial construct was examined in the current study. The managerial construct of employee empowerment was based on decades of research analyzing the form, the use, and the consequences of power (Fernandez & Maldogaziev, 2013). Furthermore, employee managerial empowerment practices represent external forms of control used by managers to influence intrinsic motivation and employee engagement, which contributed to the current study (Deci & Ryan, 1985, Lawler & Worley, 2006).

Employee Empowerment and Employee Engagement

Employee empowerment is an essential driver of employee engagement (Lawler & Worley, 2006). However, research has been limited on the relationship between employee engagement and specific leadership behaviors (He, Zhu, & Zheng, 2014). Researchers have suggested that employees who are empowered with autonomy and decision-making authority, who believed their supervisors encourage their learning and development and who perceived having a high-quality relationship with their supervisors will report being engaged in their work (Schaufeli & Salanova, 2008). Nonetheless, a better empirical

understanding of what specific managerial behaviors, particularly behaviors of employee empowerment, will lead to higher work engagement (Macey & Schneider, 2008).

Purcell (2014) found that while many factors exist that strongly associate with high levels of employee engagement and employee empowerment, one primary factor is the connection an employee feels when there was involvement in a practice related to his or her work. Macey and Schneider (2008) stated that engagement is about passion and commitment, the willingness to invest self, and expanding one's discretionary effort to help employees succeed. Organizational leaders who depend less on hierarchical communication and authority provide employees an opportunity to express their voices and therefore invest themselves in their work (Kahn, 1990). Organizational leaders may increase employees' trust and feelings of psychological safety, thereby encouraging employees to satisfy their own needs (Deci & Ryan, 1989). Furthermore, formal and informal systems of rewards that support meaningful work and employee participation encourage psychological presence (Kahn, 1990).

In much of the literature on empowerment and employee engagement, researchers focused on providing meaningful work to employees to facilitate both their motivation and personal growth (Spreitzer, Kizilos, & Nason, 1997). Self-determination theory (SDT) proponents explained that the experience of employee engagement requires the satisfaction of basic psychological needs, such as competence, autonomy, and relatedness.

Employee Engagement and Self-Determination Theory

As in Kahn's (1990) conceptualization, engagement occurs when individuals are emotionally connected to others and cognitively vigilant. Employees are emotionally and cognitively engaged when they know what is expected of them, have what they need to

complete their work, have opportunities to feel an influence and fulfillment in their work, perceive that they are part of something significant with coworkers whom they trust, and have chances to improve and develop (Harter et al., 2002).

People need to feel autonomous and competent. People believe that they are able to perform their job well (Deci & Ryan, 2017). Without a sense of confidence in their abilities, individuals will feel inadequate, and will likewise lack a sense of empowerment and engagement (Conger & Kanungo, 1988).

Employee Empowerment and Self-Determination Theory

Proponents of self-determination theory posited that people have an innate tendency toward growth and intrinsic motivation, and intrinsic motivation and well-being require satisfying the three psychological needs of relatedness, competence, and autonomy (Deci & Ryan, 1985). In organizations, manager behaviors and practices are believed to satisfy the need for autonomy, competence, and relatedness and have been found to positively influence work-related attitudes, such as organizational commitment (Gagne & Koestner, 2002) work engagement (Deci & Ryan, 1985), task enjoyment (Black & Deci, 2000) and job satisfaction (Deci, Connell, & Ryan, 1989). A leader's ability to demonstrate employee empowerment practices will influence how employees perceive the tasks presented to them. If a leader enhances the meaningfulness of work, allows participation in decision-making, facilitates the accomplishment of tasks, communicates confidence and provides autonomy they will influence the satisfaction of the employee's basic psychological needs at work (Deci et al., 2000).

According to SDT proponents, management practices, and reward systems have an important role in satisfying employee needs and promoting autonomous regulation (Gagne & Deci, 2005). When rewards and recognition are given to acknowledge employee competence rather than to control their behaviors, autonomous motivation is increased (Gagne, Chemolli & Forest, 2008).

Summary

The literature reviewed indicated that employee engagement, as described by practitioners and researchers, continues to be defined poorly, but resembles a common theme of employee satisfaction and positive organizational outcomes. Self-determination theory includes both autonomy and controlled motivation, which are on opposite ends of a continuum referred to as intrinsic and extrinsic motivation. Finally, employee empowerment practices implemented by managers are recognized as important contributors to both employee engagement and self-determination theory. The next chapter will provide an overview on the methodology used for this study.

Chapter 3: Methodology

The current study used secondary data to engage in a comparative quantitative analysis of participant responses to an online survey by officials of the federal government in the spring of 2015. A structural equation modeling (SEM) framework was used to investigate the relationships between perceived employee empowerment practices, self-determination theory, and employee engagement. The instrument, data collection procedures, population, measurements, and data analysis will be discussed in this chapter.

Instrument

The Office of Personnel Management (OPM) is the largest employer in the United States, with more than 2.7 million civilian employees. Officials at the OPM collect, compile, and publish statistics about their workforce, which makes them a prime resource laboratory for research initiatives (Jennings, 2016).

Officials in the federal government, in an effort to be transparent and responsive to taxpayers, administer their own employee surveys (OPM, 2015). Therefore, the data used to further the research were garnered from the Federal Employee Viewpoint survey (FEVS). The FEVS is a self-report instrument used to solicit employee perceptions of their work experiences, their agencies, and their leaders. The metrics are used to provide leaders and human resource (HR) practitioners with statistically reliable information of employee opinions and to assist agency officials with the design of intervention programs, such as leadership development, organizational effectiveness, and employee satisfaction, which are used to drive employee engagement (OPM, 2015).

In 2002, President George W. Bush released the President's Management Agenda, in which he required federal agency officials to develop and maintain a human capital plan

and assess application of the plan using an employee satisfaction survey. The Federal Human Capital survey, called the FEVS, was created in 2002, and has been administered by OPM since 2002 (GAO, 2015). The survey was offered every two years until 2010, and since 2011 it was administered annually (Office of Personnel Management, 2015). Since its inception in 2002, the FEVS has had several iterations. The number of survey items increased over the years, beginning with 28 and reaching 98 in 2013. The survey has remained consistent since 2013 (Fernandez et al., 2015).

While officials at OPM did not create the FEVS explicitly for academic research, the survey data has been used to produce numerous publications and empirical studies of public management and public organizations. In February 2014, Fernandez et al. (2015) conducted a bibliometric analysis of all published peer-reviewed journal articles using the key term Federal Employee Viewpoint Survey. This produced 216 results measuring a number of critical constructs, including (a) leadership styles and approaches, (b) performance management practices, (c) equity and fairness, (d) employee empowerment, (e) employee attitudes, and (f) job satisfaction. Based on the consistency of the survey items and the ability to access the data from a free public database, the FEVS has been used to provide researchers opportunities to build on existing studies and test the robustness of published findings using different methods (Fernandez et al., 2015).

In psychological, organizational, and managerial research, measurement instruments are designed to assess various facets of an overarching construct, such as engagement, empowerment, and motivation (Morin, Boudrias, Marsh, McInerney, Dagenais-Desmarais, Madore, & Litalien, (2017). While the facets are grouped as part of one single overarching label, they are typically represented in measurement models as a series of distinct correlated

factors. Morin et al. (2017) raised several questions regarding the validity of using a single instrument to test three separate constructs. First, Morin et al. (2017) questioned whether the variables retained meaningful specificity over and above the assessment of the overarching construct. Second, Morin et al. (2017) questioned whether the overarching construct exists as a global entity, including specifications mapped by the facet, or if the variables reflect distinct correlated dimensions without common core. In response to the questions by Morin et al. (2017), many researchers addressed and found satisfactory the reliability and validity of various constructs contained in the FEVS (e.g., Bertelli, 2006a; Cho & Perry, 2012; Choi & Rainey, 2010; Fernandez, 2008; Rubin, 2009; Sa, 2012; Trottier, Van Wart, & Wang, 2008a; Bailey-Jones, & Schmidt, 2008). Bailey-Jones (2008) focused on the reliability of the FEVS as the central problem. Bailey-Jones (2008) computed the Cronbach alpha coefficient for 19 baseline questions from the 2006 FHCS (FEVS) survey and found it to be 0.92. While content and construct validity were not verified by independent researchers using the FEVS (FHCS) for every construct, it appeared to have significant face validity. Officials at Office of Personnel Management (2015) reported detailed sample design and selection procedures for the original survey.

Data Collection Procedures

To be eligible to complete the 2015 FEVS, employees had to be full-time or part-time nonseasonal employees and onboard in a federal work position as of October 31, 2014. A total of 82 agencies participated in the survey, including 37 large agencies and 45 small independent agencies. A total of 839,788 employees were invited to participate in the survey. The 2015 response rate for the FEVS government-wide was 49.7% or 421,748 returned surveys (OPM, 2015).

The FEVS was administered electronically via the Internet, and employees received an e-mail notification inviting them to complete the survey, with weekly reminders sent to complete the survey. The survey was 100% voluntary and participants had the option to exit the survey at any time. The survey was open for six weeks, from May 4 to June 7, 2015. The survey included 98 items, and each participant completed the survey in approximately 30 minutes. The employee responses were gathered using three 5-point Likert scales: (a) *Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree*; (b) *Very Satisfied, Satisfied, Neither Satisfied nor Dissatisfied, Dissatisfied, Very Dissatisfied*; and (c) *Very Good, Good, Fair, Poor, Very Poor*" (OPM, 2015).

The data set for the 2015 FEVS was available to researchers and members of the public in comma-separated values (CVS) format, SAS format, and SPSS® formats on request (Office of Personnel Management, n.d.). The full data set was downloaded into SAS 9.4 format and the content was modified to eliminate data that were not used in the current study.

Population

The current study was isolated to one agency, the Centers for Disease Control and Prevention (CDC), for analysis. The approach is expected to be beneficial by providing CDC leaders and human resource managers (HRMs) with empirical data to assist them in improving practices to influence employee engagement. The survey was completed by 7,169 employees from the 10,565 employees invited, resulting in a response/total ratio of 68% (Office of Personnel Management, 2015).

Assumptions

In the current study, archived data were used to conduct a secondary analysis. The raw data collection did not include any personal identifying information that was linked to any specific individual. The first assumption was that the original collection of data followed all correct principles and guidelines for conducting the initial survey. The second assumption was that the employees who took the time to complete the survey were honest in their responses, and they believed their responses would be valued by the organization.

Data Analysis

Data analysis procedures involved four major phases. Phase 1 was data screening; Phase 2 was model specification of the hypothesized model; Phase 3 was model identification and estimation of the three constructs and their latent variables; and Phase 4 was testing the hypothesis using the SEM path analysis.

During Phase 1, data were screened using SAS version 9.4. In Phase 1, all variables were examined for accuracy of data entry, missing values, outliers, and normality. Missing data are often unavoidable and difficult to control for based on circumstances beyond the researcher's control. Nonetheless, the presence of missing data may have had considerable implications to the study if it did not occur at random, implying a systematic difference in how some participants responded to the survey, possibly affecting the ability to generalize the results of the study. Listwise deletion is a commonly used method for managing missing data sets of large sample sizes, while leaving adequate power for a meaningful study (Peugh & Enders, 2004). Therefore, based on the large sample size in the current study, listwise deletion was used to remove 2,775 incomplete responses for the mediation analysis, resulting in a final sample size of 4,394.

While common method variance (CMV) is often considered as a concern for single-source survey data, the current study used a partial correlation technique referred to as a marker variable to assess for common method biases. Lindell and Brandt (2000) argued that a marker variable test was an effective statistical remedy for controlling for common method bias if a variable could be identified in the study that was unrelated to at least one other variable in the study; then it could be used as a marker to determine if any observed relationship existed between the variables.

Phase 2 involved model specification of the hypothesized model. Model specification is the first step of structural equation modeling (SEM) and is the step in which both the measurement and structural models are developed (Bentler, 2010). For example, a measurement model outlines the variables to each of the constructs, and a structural model draws a path connecting one construct to other constructs. The measurement model for the current study included three latent constructs of employee empowerment (EMP), self-determination theory (SDT), and employee engagement (ENG).

The data used in the current research were derived from a secondary data source and were not gathered specifically for the current research. Therefore, it was important to begin the development of the measurement model by predicting the measures for each of the constructs dimensions. The single survey FEVS, including 98 items, was used to measure the constructs of perceived employee empowerment practices, self-determination theory, and employee engagement. Based on the literature and the theoretical models, survey items that appeared, initially, to be reflective of the concepts and dimensions were selected (Morin, Arens, & Marsh, (2016).

Measures

The constructs and dimensions with the corresponding measurement items, beginning with perceived employee empowerment practices, then the self-determination theory, and finally, employee engagement, are outlined (see Figure 3). Using Bowen and Lawler's (1992) model of employee empowerment practices, 14 measures were found spreading over four dimensions: (a) shared knowledge, (b) shared goals, (c) shared rewards, and (d) shared power.

Shared goals were measured using five items. An example item included, "I have enough information to do my job." Shared goals were measured with three items. An example item was, "Managers communicate the goals and priorities of the organization." Shared rewards were measured using three items, with an example statement of, "Promotions in my work unit are based on merit." Finally, shared power was measured using three items. An example item was, "Employees have a feeling of personal empowerment with respect to work processes."

Based on the theory of basic psychological needs by Deci and Ryan (1980), nine measures were found and spread over the three dimensions of (a) autonomy, (b) competence, and (c) relatedness. Autonomy was measured using three items. An example item was, "I am constantly looking for better ways to do my job better." Competence was measured using three items, with an example item of, "My training needs are assessed." Relatedness was measured using three items. An example of an item used was, "The people I work with cooperate to get the job done."

Based on Kahn's theory of employee engagement, nine measures were identified and spread over the three dimensions of: (a) psychological safety, (b) psychological meaningfulness, and (c) psychological availability.

Psychological safety was measured using three items. An example item included, "My supervisor treats me with respect." Psychological meaningfulness was measured with three items. An example item was, "I like the kind of work I do." Finally, psychological availability was measured with three items, with an example measure of "My workload is reasonable."

The second step involved the development of the structural model. The structural model specified relationships among the latent variables in the theoretical model (Crockett, 2012). In the current study, the structural model was used to identify the following: (a) the hypothesized direct relationship between the exogenous variable, perceived employee empowerment practices, and the latent outcome variable employee engagement, and (b) the hypothesized indirect relationship between the exogenous variable perceived employee empowerment practices and the latent outcome variable employee engagement using the latent mediator variable self-determination theory.

Phase 3 involved model identification and estimation of the three constructs and their latent variables. Model identification is an important step in SEM analysis because it is the phase that is used for the evaluation of theorized concepts. For a model to be considered identified, it must be possible to theoretically establish a unique estimator for each parameter (Kelloway, 1998; Schumacker & Lomax, 2010). Kelloway (1998) stated that for a model to be identified, it must have at least three indicators that load on a single latent variable, the errors of the indicators are not correlated, and each indicator loads on

one factor. Kelloway (1998) stated for a model to be identified, it must have two or more latent variables, but the latent variable has only two indicators loaded, the errors of the indicators are not correlated; each indicator loads on only one factor, and the variances or covariance between the factors is zero.

In this phase, a rigorous psychometric assessment of all variables for each construct was performed using structural equation modeling (SEM) methods through the PROC CALIS and Proc FACTOR programs in SAS for data analysis. SEM is often the choice of analysis by researchers, because it can be utilized to confirm an a *priori* model, test alternative models, or generate models (Kline, 2011). According to Kline (2011), the use of SEM for model discovery has three requirements: "(1) it is theoretically logical, (2) it is reasonably parsimonious, and (3) it statistically fits the data" (p. 8). In the present study, SEM was used to evaluate the constructs based initially upon the theoretical concepts identified in the literature.

The objective in this phase was to compare the fit measures of five separate models for each construct to determine the best-fitting model to test the hypothesis. Morin et al. (2013) suggested that in preliminary analysis at the level of individual items, a researcher should minimally compare ESEM, ICM-CFA, and bifactor measurement models based on all of the constructs to be considered. Therefore, the current study was used to examine the structural validity of the FEVS and develop five models for each construct. The five models: (a) first-order ESEM, (b) one-factor ESEM, (c) ICM-CFA, (d) bifactor CFA, and (e) second-order CFA were examined to gain a better understanding of their strengths and to capture the underlying factor structure of the multidimensional measure. Figure 4 shows diagrams of the different models tested in this study.

The exploratory ESEM is appropriate when uncertainty exists regarding an a *priori* factor structure. Thus, exploratory ESEM is valuable as a tool for clarifying the factor structure and eliminating potentially weak items (Bentler, 2010). ESEM is used to provide ways to test how the data fit and to assess the relationship between latent and observed variables for each construct. More importantly for the current study, ESEM can be used as a confirmatory tool and is considered most appropriate for model analysis when it fits the data better than does a corresponding ICM-CFA model. Otherwise, the ICM-CFA factor structure was preferable, based on parsimony (Morin et al., 2013b). However, a growing body of researchers suggested that ICM-CFA models are typically too restrictive to provide an acceptable fit for many psychological instruments (Morin et al., 2013).

Hierarchical models are used as other ways to examine data by including the items defined in the first-order factors, which are used to define a higher-order factor, reflecting the variance that is shared among the first-order factors (Morin et al., 2013). Finally, the bifactor model was used to provide an important alternative to hierarchical models (Reise et al., 2012). The bifactor model was also used to test the presence of a global unitary construct underlying the answer to all items, and whether the global construct coexists with meaningful specifications defined by part of the items unexplained by the G-factor (Morin et al., 2017). The next section outlines the process for identifying factors for the latent constructs.

An ESEM and confirmatory factor analysis was conducted to evaluate each of the measurement models. Maximum likelihood estimation methods were used, and the input for each analysis was the covariance matrix of items. Rotated factor patterns with oblique

rotation were used by raising the loadings to a power of 4 to achieve a simple structure (Gorsuch, 1983) for the ESEM analysis.

Over the past quarter century, at least 24 fit indices have been developed to test data. To date, researchers have not agreed completely on what measures match the preferred data or how to organize the array of fit indexes. Several classification schemes, such as absolute, relative, parsimonious, and model comparison, have been proposed to organize fit indexes. Schmitt (2011) recommended using fit measures without reference to their classification.

While no single statistical significance test exists that identifies a correct model, given the sample data, a large number of commonly used goodness-of-fit indices were used in the current study to examine if the model is consistent with the empirical data (Hu & Bentler, 1999). The measurements used for the current study were the chi-square (x^2), the comparative fit index (CFI), the Tucker-Lewis index (TLI), the Akaike information criterion (AIC), the root mean square error of approximation (RMSEA), and the Bayesian information criterion (BIC) test. Due to the oversensitivity of the chi-square (x^2) test, sample sizes greater than 200, such as this one, are almost always found to be statistically significant (detecting bad model fit). According to interpretation guidelines (Hu & Bentler, 1999; Marsh et al., 2004), when comparing models values greater than 0.90 and 0.95 for the CFI and TLI, respectively, support excellent fit while values smaller than 0.05 and 0.08 for the RMSEA indicate an acceptable fit and values above 0.10 were considered a poor fit to the model (Hu & Bentler, 1998). Byrne (1998) suggested when conducting SEM research, the CFI should be the fit statistic of choice. Relative fit indices, AIC and BIC, were used for model selection. The measures do not in themselves describe model fit, but a model

with a lower value indicates a better fitting model compared to a model with a higher value when alternative models are compared. Additionally, the lowest fitting AIC and BIC were most likely to replicate in future samples (Byrne, 2001; Hu & Bentler, 1995; Kline, 2011).

Phase 4 involved testing the hypotheses using SEM path analysis. Baron and Kenny (1987) and Judd and Kenny (1981) noted when a mediational model involves latent constructs, SEM provides the basic data analysis strategy. Researchers noted SEM should be considered for assessing mediation because it offers a reasonable way to control for measurement error and provides a variety of ways to explore the mediation effect (Baron & Kenny, 1986; Holmbeck, 1997; Hoyle & Kenny, 1999; Judd & Kenny, 1981; Kline, 1998). Additionally, SEM has been found valuable because it allows for simultaneous analysis of direct and indirect relationships among latent and observed variables (Baron & Kenny, 1986). During the phase, the structural model was examined.

When mediation is hypothesized, an independent variable (X) is expected to affect an intervening variable (*M*), which, in turn, is expected to affect a dependent variable (*Y*). For example, the relationship between perceived employee empowerment practices (*x*) and employee engagement (*Y*) is mediated by self-determination theory (*M*).

Summary

The methodology for the study was depicted in this chapter. The data collected from the 2015 FEVS were used for a secondary analysis. An empirical design using a SEM framework was outlined for the data analysis to answer the research questions in the chapter. The literature was used to support the research design, and the results will add additional knowledge to employee engagement research. Chapter 4 provides the detailed analysis on the data that was examined and a summary of the conclusions.

Chapter 4: Results

The purpose of the current study was to examine the relationship between employee empowerment practices, self-determination's theory of basic psychological needs, and employee engagement. Descriptive statistics, hypothesis testing, and analysis were performed on the data using SAS 9.4. The chapter shows the data analysis procedures and summary of the results of the hypothesis.

Characteristics of the Population

Data were collected from a sample of 4,394 federal employees at the Centers for Disease Control and Prevention (CDC). The fundamental demographic information for CDC employees is provided in Table 4. The sample included 40% male employees and 61% female employees. In the sample, 42% of the participants were employed by the federal government for 15 years or more. Of the population, 2,931 participants (68%) had postbachelor degrees and 20% had bachelor degrees. A majority (77%) of the participants did not occupy a supervisory position, while 23% of participants did hold the position of supervisor, manager, or senior leader.

Descriptive Statistics

Table 5 shows the scale reliabilities, means, standard deviations, skewness, and kurtosis for all study variables. Cronbach's alpha (α) of each construct ranged from 0.67 to 0.94. Data were screened for missing data using listwise deletion, and 2,775 responses were removed, leaving 4,394 observations for the current study.

Construct Measurement Models

The section includes the examination of the five models for each construct and a review of the model fit measurements of perceived employee empowerment practices, self-

determination theory, and employee engagement. The hypothesized model including the latent variables is shown in Figure 5.

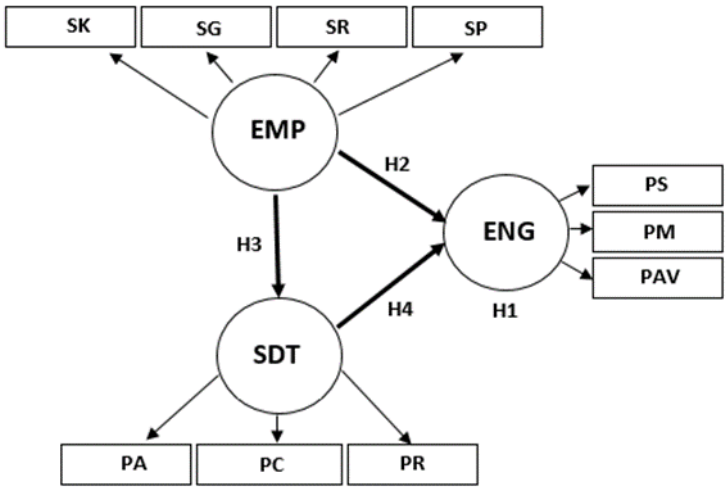


Figure 5. The hypothesized model with latent variables SK = shared knowledge, SG = shared goals, SR = shared rewards, SP = shared power, PA = psychological autonomy, PC = psychological competence, PR = psychological relatedness, PS = psychological safety, PM = psychological meaningfulness, PAV = psychological availability.

The same strategy for evaluating the measurement of all three constructs was followed, and the research began by outlining how the employee empowerment practices construct was evaluated. First, a four-factor ESEM first-order model was tested, with no constraints on factor loadings. Three items were selected for each dimension (SK, SG, SR, SP), because experts recommend a minimum of three indicators per latent variable (O'Boyle & Williams, 2011. An examination of the rotated factor pattern matrix resulted in 14 items loading on the targeted factors (*SK* = 5, *SG* = 3, *SR* = 3, *SP* = 3), with loadings ranging from 0.53 to 0.97, indicating high communality. Given the large sample size, all predicted hypothesized factor loadings were significant. Next, a one-factor ESEM was tested, with no constraints on the factor loadings. Thus, all 14 items were tested on one-factor, with loadings ranging from 0.60 to 0.84. The third model tested a highly

constrained four-factor ICM-CFA structure. All loadings not predicted to load on the subscale were set to zero. Next, model 4 (bifactor CFA) was fit to the data, because it allowed for both a general factor (see Table 6) for employee empowerment practices and multiple domain specific factors (SK, SG, SR, and SP), with an orthogonal relationship among both (Sousa, 1990). Finally, a second-order CFA was tested. The hierarchical model also fit a general factor for the employee empowerment practices to account for the commonality among the lower order factors, representing each of the domains, albeit with proportional constraints, based on the indirect nature of the relation between items and the second-order construct (Reise et al., 2012). The second-order CFA model was able to be statistically tested, because it included three or more first-order factors that are hypothesized (Sousa, 1990).

Next, model comparisons were assessed to determine the best-fitting model for employee empowerment practices (see Table 7). The results indicated that model 4 (bifactor CFA) provided an excellent degree of fit to the data according to all indices. The TLI and CFI (= 0.99, for both) were among the highest of all five models, and the RMSEA of 0.03 was the lowest measure across all tested models. The results showed a single G-factor well-defined by strong and positive loadings from most items (–0.62 to 0.85). Model 2 (1-factor ESEM) fit the data poorly. The TLI and CFI (0.79 and 0.82, respectively) were < 0.90, and the RMSEA (0.15) was greater than the suggested fit of = < 0.08. The AIC and BIC had the highest measures among the models across the five competing models. Although models 1 (-factor ESEM), 3 (-factor ICM-CFA) and 5 (second-order CFA) also yielded a good fit, the bifactor model appeared to the best model in terms of both fit and parsimony.

Next, the same five models were examined for the construct of self-determination theory. Similar to employee empowerment practices, a three-factor ESEM was examined. The model assessed each dimension (PA, PC, and PR), with no constraints on factor loadings. Three measurement items were selected for each dimension. Moreover, a one-factor model, an ICM-CFA, bifactor-CFA (see Table 8), and second-order CFA were also examined. The model fit measured for comparison is listed in Table 9.

The bifactor CFA (model 4) again resulted in the best-fitting measures for self-determination theory. The TLI and CFI (0.97 and 0.98, respectively) were > 0.90, and the AIC and BIC were the lowest in model comparison, and the RMSEA (0.04) was less than the suggested 0.08. Model 3 (ICM-CFA) fit measures were extremely poor in comparison to the other models. The TLI and CFI were 0.80 and 0.85, respectively, and the AIC and BIC were the highest in comparison. Model 1 (3-factor ESEM) showed acceptable fit measures; however, the AIC and BIC were not the lowest in comparison and model 3 had the better x^2 value of 245.32, compared to model 1, with 354.12. When comparing models, results indicated the bifactor CFA (model 4) with a *g* factor plus specific components provided the best fit to the data.

The final construct evaluated was employee engagement. Following the same strategy as before, a three-factor ESEM model for employee engagement was tested for each dimension (PS, PM, PAV), with no constraints on factor loadings (see Table 10). Three items were selected for each dimension based on the research. Models 2 to 5 evaluation and model-fitting followed the same process as the previous two constructs. The results shown in Table 11 were used to support model 4 (bifactor CFA) over the other four models because it also yielded the best-fitting statistics. Model 2 (1-factor ESEM) yielded

the poorest fitting model for the following reasons. The TLI and CFI (0.67 and 0.75, respectively) were lower than the required = > 0.90. The AIC and BIC showed the highest values in model comparison and the RMSEA (0.21) well exceeded the required fit standard of = < 0.08. While models 3 (3-factor ICM-CFA) and 4 (second-order CFA) measures indicated a TLI and CFI greater than 0.90, the RMSEA was greater than 0.08.

In summary, the bifactor-CFA models that accounted for both general and specific factors were the best-fitting model for all three constructs examined in the current study.

Testing Hypothesis: The Research Model

Structural equation modeling (i.e., latent variable path analysis) was used to examine the direct and indirect effects of the relationships between the perception of employee empowerment practices, employee engagement, and self-determination's theory of basic psychological needs. The process for testing the hypothesized direct and indirect relationships is described in the next section.

First, the hypothesized framework in which the self-determination theory partially mediated the relationship between perceived employee empowerment practices and employee engagement was tested. Specifically, using SEM, the test was used to examine the direct and indirect effects of the exogenous factors (predictors), directly predicting the endogenous factors (mediator variable and outcome). The model is shown in Figure 6, model 1. In addition to the hypothesized model, an alternative model (see Figure 6, model 2) was tested to determine if the data provided a better fit to the alternative model than to the original hypothesized relationship. Specifically, the alternative was to examine if perceived employee empowerment practices partially mediated the relationship between self-determination theory and employee engagement.

To test the models, a decision had to be made regarding using the *g*-factors only for each construct in the hypothesized paths, or whether to include both general and specific components. When using bifactor constructs, Rodriguez, Reise, and Haviland (2016) suggested examining two indices for guidance when making the decision. First, unless subscale reliabilities are rather high ($\alpha > 0.80$), more stable solutions are likely to be obtained by using only the general factors. In this case, only the employee empowerment resulted in all subscales exceeding the recommended reliability.

A second consideration was the amount of explained common variance (ECV) attributable to the general factor compared to the specific factors. For the constructs in the current study, the following ECV indices were obtained: 75.8% for EEP, 58.8% for SDT, and 52% for EE, which indicated that 75.8% of the common variation in the EEP construct was attributable to the general EEP factor, whereas over 50% of the EE and SDT constructs could be attributed to their general factors. When combined, the results indicated the use of only the general factors when evaluating the mediation models.

Although only using the general factors in the evaluation of the meditational models, it was also important to maintain the integrity of the bifactor models. Therefore, bifactor models were estimated and fit into all meditational models, despite the fact that directed paths were only allowed to flow from the general factors.

Both models were evaluated for fit with the following fit indices (see Table 12): chi-square (x^2); comparative fit index (CFI); Tucker-Lewis index (TLI); the root mean square error of approximation (RMSEA); and the standard root mean square residual (SRMSR). Both models showed a good fit, with CFIs and TLIs greater than 0.90 and

RMSEA showing an excellent fit at 0.06. Moreover, the SRMSR for both models was smaller than 0.10, showing a good fit.

The hypothesized mediation model (model 1) was estimated, with SDT partially mediating the relationship between perceived employee empowerment practices and employee engagement (see Figure 6, model 1). The fit of the model to the data was good: $x^2 = 6158.83$, $df = 376$, $p < .0001$, RMSEA = 0.06, SRMSR = 0.04, CFI = 0.95, and TLI = 0.93. The model was compared to the alternative model (see Figure 6, model 2), which also showed a good fit: $x^2 = 6266.36$, $df = 376$, $p < .0001$, RMSEA = 0.06, SRMSR = 0.04, CFI = 0.95, and TLI = 0.93.

Figure 6, Model 1 shows path coefficients and standard errors from the partial mediation model, including ones between predictor and mediator, and between mediator and the outcome dependent variable employee engagement. The results showed that EMP was directly related to ENG ($\beta = -13.28$, $p < 0.0001$) and EMP on SDT ($\beta = 0.99$, $p < 0.0001$) has a significant direct effect. Additionally, data showed that SDT has a significant direct effect on ENG ($\beta = 13.59$, $p < 0.0001$). Furthermore, the indirect effect was also significant (see Table 13), suggesting partial mediation. While the data appeared to indicate significant direct effects, it appeared that the model also suggested inconsistent mediation, because the total effect was less than the direct effects, and the indirect and direct paths were of opposite sign. One explanation for such findings was a suppression effect (see discussion), it may also be the case that there was near collinearity of the EMP to SDT path.

The alternative model shown in Figure 6, Model 2, tested the direct and indirect effects of perceived employee empowerment practices as the mediator. In the structural

model, SDT had a direct effect on ENG ($\beta = 0.92$, $p < 0.0001$), SDT had a significant direct effect on EMP ($\beta = 0.92$, $p < 0.0001$), and EMP had a direct effect on ENG ($\beta = 0.07$, $p < 0.0001$). The indirect effect of SDT on ENG was also significant ($\beta = 0.03$, $p < 0.0001$), indicating that EMP partially mediated the relationship between SDT. However, the data indicated that overall very little mediation was occurring and that the primary predictor of engagement in the model was SDT.

Summary

SEM was conducted to examine five different models for each construct. A bifactor-CFA model accounting for both general and specific factors was found to be the best fitting model for employee empowerment practices, self-determination theory and employee engagement. SEM (latent variable path analysis) was used to examine the hypothesized framework (Model 1) and an alternative model (Model 2). Chapter 5 will discuss the results and implications of these findings for research and practice.

Chapter 5: Discussion

Summary of Study

The purpose of the current study was to understand and investigate the relationships between employee empowerment, self-determination's theory of basic psychological needs and employee engagement in a federal government organization, specifically the Centers for Disease Control and Prevention (CDC). In the study, secondary data from the 2015 FEVS was used. The survey was available online from May through June 2017 and open to all eligible full- and part-time employees. The current study included 4,394 responses after listwise deletion was completed to remove missing data.

Most researchers agree that using secondary data is beneficial when examining psychological constructs for several reasons (Anderson, Prause & Silver, 2011). First, secondary data defrays the cost and time investment of designing questionnaires, collecting complex data, and maintaining large datasets (Anderson et al., 2011). Further, secondary data introduces multidisciplinary perspectives providing researchers the opportunity to study the data on varying theoretical frameworks. For example, the FEVS has been used to examine a variety of constructs in the areas of leadership, empowerment, performance management, and engagement. The cons of using secondary data are that it limits the researcher's ability to design specific questions or select a particular measurement instrument (Anderson, et al., 2011). The Office of Personal Management (OPM) provides FEVS datasets at no cost to the public, making it a practical tool for the current study. Additionally, the availability of the 2015 data set was timely, as many researchers confirmed that employee engagement continue to decline in the federal government (GAO,

2015). Finally, the measurement items included in the FEVS seemed to fit the theoretical frameworks examined in the current study at face.

A rigorous psychometric assessment of all variables for each construct was performed using a SEM framework. Five measurement models were developed and tested for each construct: (a) a first-order, (b) one-factor (c) ICM-CFA, (d) bifactor CFA, and (e) a second-order CFA. The bifactor-CFA model accounting for both the general and specific factors was the best fitting model for all three constructs. Structural Equation modeling (i.e., latent variable path analysis) was used to examine the direct and indirect effects of the relationships between the perception of employee empowerment practices, employee engagement, and self-determination theory.

Summary of the Findings

Model 1, which evaluated the possibility of employee empowerment practices partially or completely mediated by self-determination in terms of its downstream effect on employee engagement, resulted in what MacKinnon, Krull, and Lockwood (2000) called inconsistent mediation. According to Mackinnon et al., (2000), it occurs when the mediator (SDT) serves to suppress variation in the independent variable (EMP), leading to even stronger effects than the direct effect alone. Thus, having an employee empowerment needs met would lead directly to less employee engagement, yet it is almost completely offset by the indirect path, which indicated that having employee empowerment needs met leads to more self-determination needs being met, which in turn leads to greater employee engagement. Controlling for the fact that employee empowerment might affect self-determination, which is the primary mechanism by which it influences employee

engagement, once controlled it appears to lead to an opposite direct effect of employee empowerment on engagement.

Model 2, which evaluated the possibility of self-determination theory partially or completely mediated by employee empowerment practices in terms of its downstream effect on employee engagement, resulted in a consistent mediation. However, the data suggested very little mediation. This study confirms the primary predictor of employee engagement is the satisfaction of one's basic psychological needs (autonomy, relatedness, and competence).

Leaders play a key role in producing a work environment that allows employees to feel energized and find meaning in their work. Researchers agree that the behaviors of leadership influence employee outcomes including employee engagement (Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009). Managers that understand the basic psychological needs that drive public service employee intrinsic motivation can drive engagement levels. Self-determination theory is a motivational theory that promotes an employee's choice of behaviors based on reasonable expectations for future outcomes. The behaviors serve a person's basic psychological needs of competence, autonomy, and relatedness (Ryan & Deci, 2000). Further, employees choose the degree to which the behavior is self-regulated, self-determined, and self-motivated (Ryan & Deci, 2000). Employees are agents of their own future intentions, and the current study indicated that when the basic psychological needs are satisfied, it drives their level of engagement (Shuck, Zigarmi, & Owen, 2015). Further, employee engagement is recognized as an individual variable and is influenced by how employees experience their surrounding work environment. The current study was used to highlight the connection of autonomy,

relatedness, and competence as salient indicators of how an employee experiences their surrounding environment (Shuck, et al., 2015).

This study found employee empowerment practices partially mediates the relationship between self-determination and employee engagement. Although the mediation was very small. Employee empowerment practices are an extrinsic form of control and perhaps thwart the levels of self-determination if not delivered with a sense of autonomy. Therefore, when a leader delegates authority appropriately employees will experience autonomy and will determine how to fulfill the expectations placed upon them. Leader empowering behaviors influence employee engagement. Leaders need to take exceptional care when they deploy empowerment practices to ensure it is done in an autonomous supportive manner that will influence one's self-determination and in-turn increase levels of engagement (Deci & Ryan, 2000).

With employee engagement on the decline, the current study was used to eliminate the chaff and offer leaders clear antecedents to the development of intervention programs to improve employee engagement at CDC. This study provided empirical evidence that understanding the need fulfillment of one's basic psychological needs and employee empowerment practice as driver of engagement can help leaders at CDC develop intervention programs appropriately.

Implications of this Study

One of the primary goals at the outset of the current study was to further investigate the antecedents of employee engagement, specifically employee empowerment practices and self-determination theory.

The current study was the first study to develop and test a model of the employee empowerment process in the public sector that accounts for the direct effect of employee empowerment practices on employee engagement and the indirect effects of engagement through employee empowerment practices and employee engagement. While the study showed minimal mediation when empowerment practices were applied, the data indicated that practices of managers contribute to employees' level of self-determination and engagement. Further, research presented earlier by Wollard and Shuck (2011) argued a limited available empirical research exists on intrinsic motivation as an antecedent to employee engagement, while the empowerment practices of managers was missing from the list altogether.

Most of the empirical studies on employee engagement have focused on the outcomes experienced by organizations having a highly engaged workforce. In line with the GAO report (2015) experts suggested that relations with managers and intrinsic motivation are the primary concern of government employees, the current study was used to offer insight into antecedents that can direct the implementation of targeted developmental programs for managers.

At a methodological level, the current study used a fairly rigorous set of measures and derived with bifactor models for all three constructs to fit a SEM latent variable model.

Limitations

One potential limitation was the use of self-reported data gathered from a single survey, which is often considered to cause common method bias. Common method variance was believed to have an effect on the observed relationships between constructs, producing artificially inflated correlations (Padsakoff, MacKenzie, Lee, & Padsakoff,

2003), although in some cases, the bias can also deflate correlations (Cote & Buckley, 1988). Spector (2006) argued that CMV is overstated and lacks empirical evidence. Nevertheless, a marker variable test was done to control for common method variance (Padsakoff et al., 2003). Two marker variables were identified and tested for each construct, showing almost no correlation to the hypothesized variables. Even though the correlations between the marker variables and the theoretical construct showed almost no relationship, there can be both empirical and conceptual limitations to using marker variables to control for common method variance. Therefore, a careful assessment is important when interpreting the results of the analysis (Podsakoff et al., 2003).

Recommendations for Additional Research

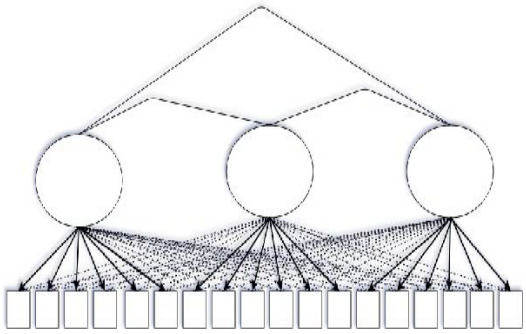
Recent budget reductions imposed by the new administration could force government agencies to downsize their human capital, in turn, imposing frustration on employees. Conducting a longitudinal study examining engagement during the first year of a political change would provide government leaders with information to help them adjust and examine organizational practices to ensure the workforce remains engaged during a time of change.

Another recommendation would be to study engagement levels of contract personnel working in a government organization. Currently, OPM experts do not invite contracting personnel to participate in the FEVS. In some cases, contract personnel make up 80% of a team leader's workforce, despite the fact that many of the contractors report full-time to a government office, report to an on-site federal manager, establish professional and social relationships with their federal colleagues, and often work in the same position for years. The findings from the current type of study could be used to inform government

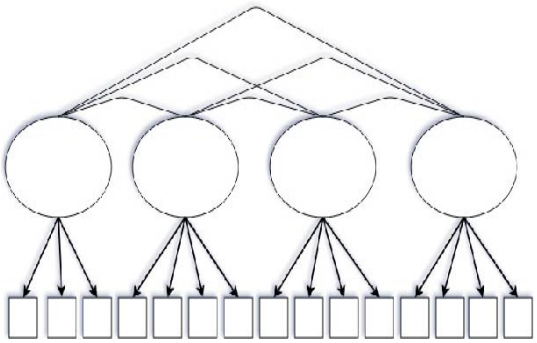
leaders if contract personnel experience engagement levels at the same level of federal employees. The results could be used to inform managers on intervention programs to increase engagement levels that affect all employees in the organization.

Employee Engagement (Kahn, 1990)		
Psychological Safety		
	49	My supervisor treats me with respect.
	48	My supervisor listens to what I have to say.
	51	I have trust and confidence in my supervisor.
Meaningfulness		
	5	I like the kind of work I do.
	13	The work I do is important.
	69	Considering everything, how satisfied are you with your job?
Availability		
	9	I have sufficient resource to do my job.
	10	My workload is reasonable.
	21	My work unit is able to recruit people with the right skills.
Self Determination Theory (Ryan & Deci 2000)		
Autonomy		
	8	I am constantly looking for ways to do my job better.
	16	I am held accountable for achieving results.
	4	My work gives me a feeling of personal accomplishment.
Competence		
	18	My training needs are assessed.
	15	My performance appraisal is a fair reflection of my performance.
	44	Discussions with my supervisor about my performance are worthwhile.
Relatedness		
	20	The people I work with cooperate to get the work done.
	26	Employees in my work unit share job knowledge with each other.
	59	Managers support collaboration across work units to accomplish work.
Employee Empowerment Practices Bowen & Lawler, 1992)		
Knowledge		
	2	I have enough information to do my job.
	6	I know what is expected of me on the job.
	1	I am given a real opportunity to improve my skills in my organization.
	3	I feel encouraged to come up with new and better ways of doing things.
	12	I know how my work relates to the agency's goals and priorities.
Goals		
	56	Managers communicate the goals and priorities of the organization.
	57	Managers review and evaluate the organization's progress toward goals.
	58	Managers promote communication among different work units.
Rewards		
	22	Promotions in my work unit are based on merit.
	25	Awards in my work unit depend on how well employees perform their job.
	33	Pay raises depend on how well employees perform their jobs.
Power		
	32	Creativity and innovation are rewarded.
	31	Employees are recognized for providing high quality products.
	30	Employees have a feeling of personal empowerment with respect to work.

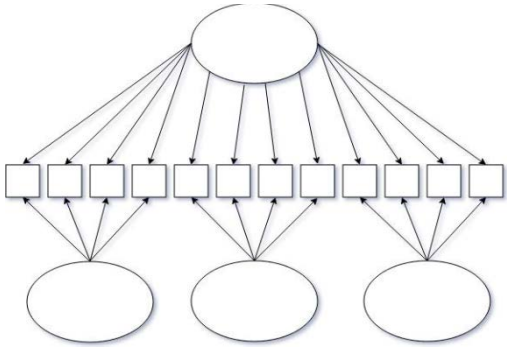
Figure 3. Measurements



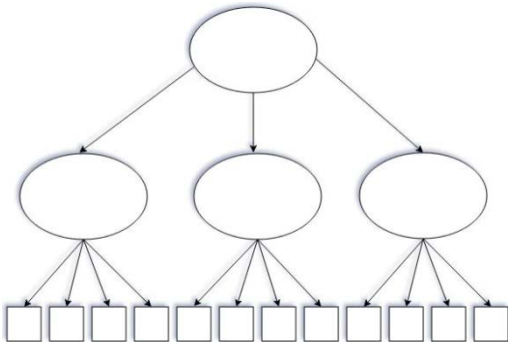
ESEM



ICM-CFA



Bifactor-CFA



Second-Order CFA

Figure 4. Model Diagrams

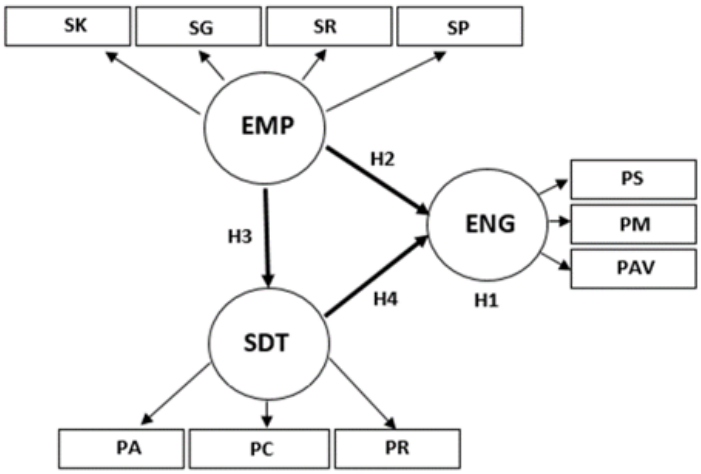


Figure 5| The hypothesized model with latent variables SK = shared knowledge, SG = shared goals, SR = shared rewards, SP = shared power, PA = psychological autonomy, PC = psychological competence, PR = psychological relatedness, PS = psychological safety, PM = psychological meaningfulness, PAV = psychological availability.

Table 4.

Demographic Representation of CDC Personnel (N=4394)			
Variable		n	Percentage
Gender			
	Male	1486	40%
	Female	2377	60%
Age			
	Under 40	978	24%
	40-49	1171	29%
	50-59	1345	34%
	60 or older	542	13%
Minority Status			
	Minority	1486	39%
	Non-Minority	2337	61%
Supervisor Status			
	Non-Supervisor/Team Leader	3098	77%
	Supervisor/Manager/Senor Leader	907	23%
Years in Government			
	5 or fewer	876	20%
	6-14 years	1605	37%
	15 or more years	1826	43%
Level of Education			
	Less than a Bachelor's Degree	520	12%
	Bachelor's Degree	849	20%
	Post Bachelor's Degree	2931	68%
Planning to Retire			
	Within 5-years	830	19%
	Not within 5-years	3442	81%

OPM, 2015

Table 5.

Descriptive Statistics, Mean, Standard Errors Skewness and Kurtosis

No	Variable	*a*	M	SD	Skewness	Kurtosis
1	Knowledge (EEP)	0.87	3.91	0.8	-0.87	0.79
2	Goals (EEP)	0.91	3.57	0.98	-0.7	0.18
3	Rewards (EEP)	0.86	3.08	1.04	-0.29	-0.56
4	Power (EEP)	0.89	3.41	0.99	-0.52	-0.22
5	Autonomy (SDT)	0.67	4.19	0.64	-0.85	1.21
6	Competence (SDT)	0.75	3.71	0.92	-0.77	0.27
7	Relatedness (SDT)	0.74	3.83	0.82	-0.94	0.98
8	Psychological Safety (ENG)	0.94	4.12	0.99	-1.22	1.01
9	Meaningfulness (ENG)	0.78	4.11	0.74	-1.13	1.65
10	Availability (ENG)	0.73	3.33	0.93	-0.42	-0.32

Table 6.

Factor loadings of the general and domain specific factors: Employee Empowerment Practices

Item	*g*	Factor 1 Shared Knowledge	Factor 2 Shared Goals	Factor 3 Shared Rewards	Factor 4 Shared Power
qn2	-0.62	0.57	0.00	0.00	0.00
qn6	-0.61	0.46	0.00	0.00	0.00
qn1	-0.70	0.33	0.00	0.00	0.00
qn3	-0.75	0.33	0.00	0.00	0.00
qn12	-0.56	0.30	0.00	0.00	0.00
qn56	-0.71	0.00	-0.59	0.00	0.00
qn57	-0.72	0.00	-0.55	0.00	0.00
qn58	-0.73	0.00	-0.39	0.00	0.00
qn22	-0.74	0.00	0.00	0.47	0.00
qn25	-0.76	0.00	0.00	0.35	0.00
qn33	-0.69	0.00	0.00	0.30	0.00
qn30	-0.79	0.00	0.00	0.00	-0.13
qn31	-0.83	0.00	0.00	0.00	-0.27
qn32	-0.85	0.00	0.00	0.00	-0.36

Table 7.

Goodness of Fit Statistic Statistics for Employee Empowerment

Model	X^2	df	TLI	CFI	RMSEA	AIC	BIC
Model 1: 4 Factor ESEM	613.40	41	0.96	0.99	0.05	741.40	1157.87
Model 2: 1 Factor ESEM	9176.75	77	0.79	0.82	0.15	8232.75	9414.95
Model 3: 4 Factor ICM-CFA	1621.50	71	0.96	0.97	0.07	1689.57	1910.82
Model 4: Bifactor CFA	1125.93	63	0.97	0.98	0.06	1209.93	1483.23
Model 5: 2nd Order CFA	1703.72	69	0.96	0.97	0.07	1775.72	2009.98

Note: TLI=Tucker- Lewis index; CFI=comparative fit index; RMSEA=root mean square error of approximation; AIC = Akaike information criterion; BIC=Bayesian information criterion

Table 8.

Factor loadings of the general and domain specific factors: Self-Determination Theory

Item	*g*	Factor 1 Autonomy	Factor 2 Competence	Factor 3 Relatedness
qn8	0.36	0.86	0.00	0.00
qn16	0.65	0.15	0.00	0.00
qn4	0.66	0.18	0.00	0.00
qn18	0.66	0.00	0.05	0.00
qn15	0.65	0.00	0.16	0.00
qn44	0.72	0.00	0.65	0.00
qn20	0.58	0.00	0.00	-0.46
qn26	0.59	0.00	0.00	-0.55
qn59	0.61	0.00	0.00	-0.10

Table 9.

Goodness of Statistics for Self-Determination Theory

Model	X^2	df	TLI	CFI	RMSEA	AIC	BIC
Model 1: 3 Factor ESEM	354.12	13	0.94	0.98	0.06	451.25	667.06
Model 2: 1 Factor ESEM	1898.07	27	0.87	0.93	0.09	1934.07	2055.47
Model 3: 3 Factor ICM-CFA	2855.00	27	0.80	0.85	0.12	2891.00	3012.4
Model 4: Bifactor CFA	245.320	20	0.97	0.98	0.04	295.32	463.93
Model 5: 2nd Order CFA	991.76	21	0.08	0.94	0.08	1039.76	1201.62

Note: TLI=Tucker- Lewis index; CFI=comparative fit index; RMSEA=root mean square error of approximation; AIC = Akaike information criterion; BIC=Bayesian information criterion

Table 10.

Factor loadings of the general and domain specific factors: Employee Engagement

Item	*g*	Factor 1 Safety	Factor 2 Meaningfulness	Factor 3 Availability
qn49	0.64	0.66	0.00	0.00
qn48	0.65	0.66	0.00	0.00
qn51	0.69	0.57	0.00	0.00
qn5	0.53	0.00	0.76	0.00
qn13	0.44	0.00	0.45	0.00
qn69	0.85	0.00	0.18	0.00
qn9	0.47	0.00	0.00	0.85
qn10	0.48	0.00	0.00	0.42
qn21	0.53	0.00	0.00	0.27

Table 11.

Goodness of Fit Statistics for Employee Engagement

Model	X^2	df	TLI	CFI	RMSEA	AIC	BIC
Model 1: 3 Factor ESEM	224.5	12	0.98	0.99	0.05	290.5	513.78
Model 2: 1 Factor ESEM	8176.21	27	0.67	0.75	0.21	8212.2	8333.99
Model 3: 3 Factor ICM-CFA	1676.09	24	0.92	0.95	0.10	1718.09	1860.17
Model 4: Bifactor CFA	129.26	18	0.99	0.99	0.03	183.26	365.95
Model 5: 2nd Order CFA	1676.09	21	0.91	0.95	0.11	1724.09	1886.47

Note: TLI=Tucker- Lewis index; CFI=comparative fit index; RMSEA=root mean square error of approximation; AIC = Akaike information criterion; BIC=Bayesian information criterion

Table 12.

Mediational Models Fit Measurements

Model	X^2	*f*	RMSEA	RMSEA Lower 90%	RMSEA Upper 90%	SRMSR	FI	TLI
Model 1	6158.83	376	0.059	0.057	0.060	0.041	0.946	0.929
Model 2	6266.36	375	0.059	0.058	0.061	0.036	0.945	0.927

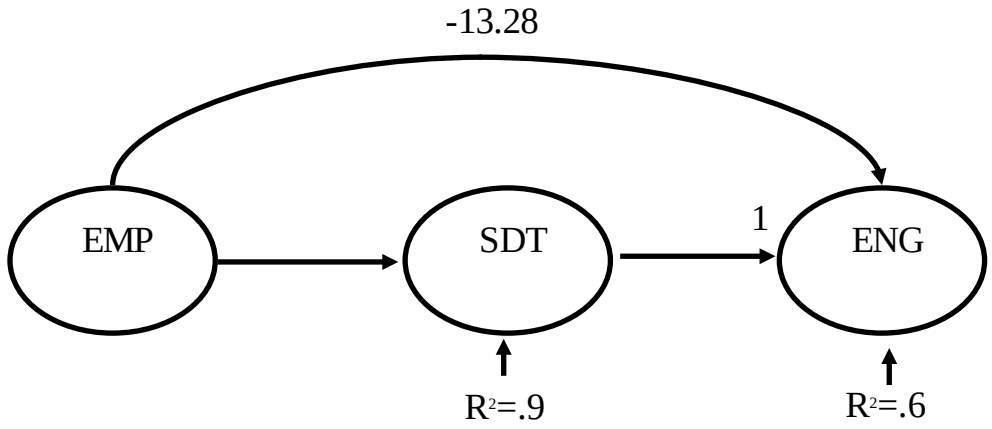
Table 13.

Mediation Models with Direct and Indirect Effects

		Direct	Indirect	Total Effect
Model 1	EMP on ENG	--13.28*	13.57*	0.2827*
	SDT on ENG	13.59*	____	13.59*
Model 2	EMP on ENG	0.07*	____	0.07*
	SDT on ENG	0.92*	.03*	0.96*

*p = <.0001

Model 1: SDT Mediator Model



Model 2: EMP Mediator Model

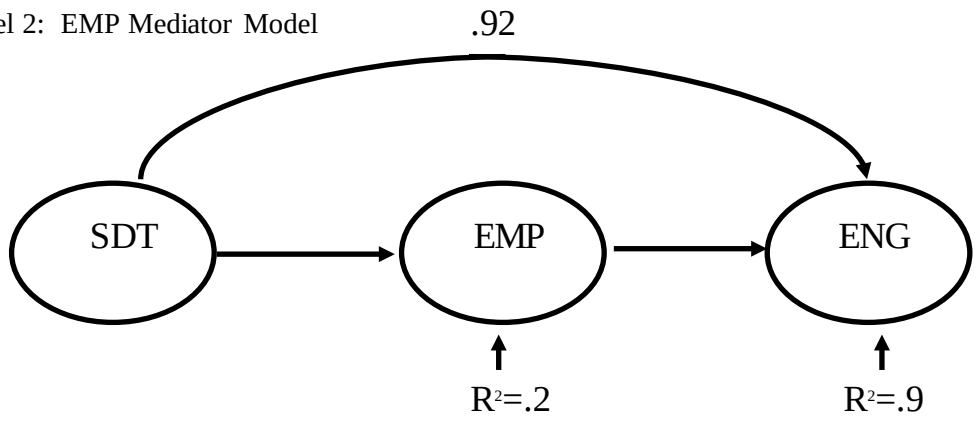


Figure 6. Hypothesized model 1 and alternative model 2 direct and indirect effects

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