LEADER ELECTRONIC COMMUNICATION AND COACHING BEHAVIORS EFFECTS ON VIRTUAL WORKERS' ENGAGEMENT

by

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A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Capella University

November 2017

Abstract

The construct of work engagement has received much attention in the literature over the last 2 decades; however, limited research has been conducted regarding virtual workers and work engagement. Advances in Information Communication Technology (ICT) have provided increased flexibility in working arrangements to employers and workers. Media-rich communications, such as voice/video communications provided by Adobe Connect, are known to be more effective at communicating complex information and ideas while less rich media communications, such as e-mail, have been found to be less effective. Managerial coaching in the virtual work environment has also received limited research. The research problem considered in this study was if e-leaders' choice of electronic communication media and or managerial coaching behaviors are related to work engagement in individual virtual workers. The methodology used in the study was a quantitative correlational approach. A non-experimental design using survey data was incorporated. The population of interest was virtual workers who work five days per week without in person interaction with a supervisor. A sample of 203 virtual workers who worked virtually the equivalent of five days without in person interaction with a supervisor was obtained through Qualtrics Panels. Sample data was analyzed with a factorial ANOVA using SPSS. Findings from the study were consistent with prior research in traditional work environments in that there was a significant main effect for e-leaders coaching behaviors upon work engagement in virtual workers. However, with an observed statistical power of 70%, this accounted for only 4% of the variance in scores for virtual workers. There was not a significant main effect or interaction effect for e-leader's use of electronic communication upon work engagement in virtual workers. An unexpected outcome of the study was e-leaders' reliance upon text-based communication.

Dedication

"Unless the Lord builds the house, the laborers labor in vain." This journey would not have been possible without God's divine hand of intercession and inspiration. At multiple times in the journey, I came to roadblocks and obstacles that I simply did not have the resources or strength to overcome. At each of these junctures, Jehovah-Jireh provided. Sometimes in terms of pointing me to just the right journal article or reference, sometimes in giving me clarity about a theory or concept, sometimes in bringing people alongside me.

Always at my side for this journey was my husband, Craig Anson, who attended many family events without me while I studied, researched, or wrote. Thank you for your faithful support. Thank you for pushing me to keep at it when I wanted to take a break. And for reminding me to stop and take a break when you knew I really needed it. Thank you for breakfast, lunch, dinner, coffee, and dark chocolate peanut M&M's. I love you and am so thankful for you. A special thank you also to my extended family and friends who prayed with me through this process and the major life events along the way. My daughter, Samantha Armel, has been my chief cheerleader. Never for a moment has she doubted that I could do this; so neither did I. I love you sweet girl. Carey Buyse, Jonell Sullivan, TJ & Teresa Nance, Patrice Neville, Barb Manaputy, Diane Shook and all the women in my evening Bible study at FBC, and Christophe Armel. Thank you also to Brad, Pam, Jason, and Stephanie Anson for being patient with me when I missed dinner, plane pulls and ball games. And to Covey Hirata, my son; thank you for taking it all in stride. Finally, thank you to my parents, Tom and Alice Nance. As kids, my dad told us if you can read, you can do anything. You have no idea how often I reminded myself of that as I wrestled with statistics.

Acknowledgments

The Capella faculty and staff have been amazing to work with during this process. Dr. Trunk explained at my last colloquium "becoming a PhD" is a process. I have been challenged to broaden my thinking to become a scholar practitioner. Early in the program, I encountered Dr. Ricky Fenwick and knew then I wanted him to be my mentor in the dissertation process if possible. Dr. Dana Shelton was the instructor in my Psychology of Coaching course. Since my dissertation included managerial coaching, I knew having her on my committee would add value to my project. Dr. Bruce Fischer was my instructor at my second colloquium as well as the Executive Director of Think2Perform Research Institute where I am a research fellow. The combined input from all three of my committee members have resulted in a better outcome. Thank you all.

The completion of the PhD process would not have been possible without support from American Public University System. Specifically, support from Dr. Karan Powell and Mr. Pete Gibbons. Karan has been a mentor for the last nine years in addition to occasionally being my boss. Thank you for your encouragement and support, Karan. Without it, I would never have considered pursuing a graduate degree let alone a PhD. Pete was my direct supervisor through all of my PhD coursework while at Capella. Pete, thank you for your flexibility and support as I completed this program. I was very fortunate to have two such great people on my side. Thank you also to my Faculty HR Team at APUS; I could not do what I do without each and every one of you. Special thanks also to Teresa Williams, Mauricia Blackwell, Amy Panzarella, and Jessica Jackson for your ongoing support and encouragement.

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CHAPTER 1. INTRODUCTION

Engagement has emerged in both the academic and practitioner literature as a topic generating considerable interest (Macey & Schneider, 2008). Scholars vary in their use and definition of the terms job, employee, or work engagement (Saks, 2006; Schaufeli, Salanova, González-Romá, & Bakker, 2002). For purposes of this study, work engagement has been defined as a positive and rewarding state of mind characterized by vigor, dedication, and absorption (Schaufeli, Salanova, et al., 2002). Work engagement has been linked to positive organizational outcomes such as financial returns (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009b), organizational citizenship behaviors (Babcock-Roberson & Strickland, 2010), and job performance (Halbesleben & Wheeler, 2008). Work engagement may be enhanced through job resources. Job resources are the physical, social, or organizational aspects of a job that (a) support the worker in attaining work related goals, (b) decrease job demands and associated physical and psychological cost of those demands, and (c) cultivate personal growth and development (Bakker, 2011; Chughtai & Buckley, 2008). Leader behaviors may affect work engagement through the promotion or cultivation of job resources (Kopperud, Martinsen, & Humborstad, 2014; Schaufeli, 2015; Tims, Bakker, & Xanthopoulou, 2011). Leader behaviors in the virtual work environment differ from leader behaviors in traditional face-to-face work environments (Avolio, Sosik, Kahai, & Baker, 2014; Kelley & Kelloway, 2012). Organizational decision-makers should select and prepare leaders

for virtual work environments based on knowledge of effective communication and coaching behaviors, which may cultivate work engagement in virtual workers. This study considers the relationship between leaders' behaviors and virtual workers' engagement.

The research problem, understanding the relationship between leaders' electronic communication and coaching behaviors with virtual workers' levels of engagement, is the focus of this dissertation. The significance of this study is multifaceted in that it considers a previously understudied population, virtual workers, and extends the current research in several domains including work engagement, leadership, electronic communications, coaching, and virtual work environments. The chapter continues with an overview of the problem and the purpose and significance of the study. The research questions are detailed along with an overview of the terms used in the study. The research design utilized in the study and the associated assumptions and limitations are also briefly discussed. The chapter concludes with an outline of the remaining sections.

Background of the Problem

Worker engagement is known to be affected by leadership (Babcock-Roberson & Strickland, 2010; Schaufeli, 2015) and to enhance job performance (Christian, Garza, & Slaughter, 2011) and organizational outcomes (Xanthopoulou et al., 2009b) in traditional work settings, yet little research has demonstrated how engagement is affected by leadership in the virtual work environment. Virtual work is performed by a diverse group of individuals working in many vocations including government workers (Vega, Anderson, & Kaplan, 2015) managers, consultants, auditors, analysts, administrative staff

(Greer & Payne, 2014), and IT professionals (Ruppel, Gong, & Tworoger, 2013). Virtual work offers the individual the flexibility of working from a home office yet this flexibility may be overshadowed by feelings of isolation (Morganson, Major, Oborn, Verive, & Heelan, 2010). Information and communication technologies (ICT's) have changed the way leaders interact with virtual workers (Avolio et al., 2014). Yet, the research literature on virtual leadership, or e-leadership, is still considered to be in the nascent stages (Avolio et al., 2014). Xanthopoulou et al. (2009b) findings emphasized the importance of coaching upon performance via work engagement. However, not all leaders may view coaching as a management responsibility (Beattie et al., 2014). Coaching virtually or e-coaching has received limited attention in the literature (Beattie et al., 2014; Filsinger, 2014). The literature on work engagement, while extensive, has focused upon traditional work settings with little consideration for the growing number of virtual workers.

Engagement of virtual workers is an important area for further study (Sardeshmukh, Sharma, & Golden, 2012). The expanded use of technology provides more opportunities for workers to enjoy the benefits of improved work life balance offered by virtual work. Providing organizational leaders with insight into those leader behaviors that positively influence virtual workers engagement may offset the negative aspects of working remotely for the individual worker and result in positive organizational outcomes as seen in traditional work settings.

The job demand resources (JD-R) theory is used as a framework for understanding how leader behaviors affect work engagement (Demerouti, Bakker,

Nachreiner, & Schaufeli, 2001). The central assumption of this theory is that all occupations have factors that can be characterized as either job demands or job resources. Job demands are those aspects of a job that require physical and/or psychological effort or skill (Bakker & Demerouti, 2007). While not all job demands are negative, they do have the potential to turn into job stressors (Bakker & Demerouti, 2007). As previously indicated, job resources are the physical, social, or organizational aspects of a job that (a) support the attainment of work related goals, (b) decrease job demands and associated physical and psychological cost of those demands, and (c) cultivate personal growth and development (Bakker & Demerouti, 2007). The second assumption of this theory is that the independent processes of health impairment and motivation result in employee well-being in the forms of burnout or work engagement (Bakker & Demerouti, 2007). The JD-R model has been used extensively as a research framework for the construct of engagement for the last 15 years (Bakker, Hakanen, Demerouti, & Xanthoupoulou, 2007; Hakanen, Perhoniemi, & Toppinen-Tanner, 2008; Hakanen, Schaufeli, & Ahola, 2008; Sardeshmukh et al., 2012; Schaufeli & Bakker, 2004a; Xanthopoulou et al., 2009a, 2009b; Yanchus, Fishman, Teclaw, & Osatuke, 2013). Leader communication and coaching behaviors, both job resources, are considered in this study.

Statement of the Problem

While the research literature provides insight into the importance of leadership in terms of work engagement, Schaufeli (2015) and Carasco-Saul, Kim, and Kim (2015) indicated further research is needed to assess leader behaviors in relations to work engagement. The research literature on e-leadership and virtual teams indicates the

choice of electronic communication medium influences the effectiveness of communication within the team (Hambley, O'Neill, & Kline, 2007; Kelley & Kelloway, 2012). Also, while there are many definitions of managerial coaching (Ellinger, Ellinger, & Keller, 2003; Gregory & Levy, 2010; Hamlin, Ellinger, & Beattie, 2006), there are few studies showing the effect or outcomes of managerial coaching (Beattie et al., 2014). What the research literature does not address is if e-leaders' choice of electronic communication media or coaching behaviors are related to work engagement in individual virtual workers.

Purpose of the Study

The purpose of this study was to understand the relationships between e-leaders' electronic communication and coaching behaviors and length of employment with work engagement in virtual workers. With more organizations using virtual workers (e.g., workers who work from a home office via computer five days per week), it is important to understand how leadership contributes to engagement in the virtual work environment particularly in light of the positive organizational outcomes previously discussed. Leadership can cultivate job resources such as social support, performance feedback, and coaching (Xanthopoulou et al., 2009b); or leadership can cultivate job demands such as work pace, emotional demands, and role conflicts (Crawford, LePine, & Rich, 2010).

Significance of the Study

This study on e-leaders' communication and coaching behaviors relationship with virtual worker's engagement is important for several reasons. According to Schneider, Macey, Barbera, and Martin (2009), work engagement is keenly important to human

capital management because it focuses upon managing employees for the benefit of the organization (e.g., in the form of positive organizational outcomes). Also, furthering understanding of which e-leader communications are most impactful to virtual workers engagement will inform training programs and selection of e-leaders. For organizational decision-makers, this understanding may inform policy related to virtual workers and the selection of technologies to create more supportive work environments for these workers. Managerial coaching behaviors are of interest to researchers and organizational decision makers in that these behaviors have the potential to improve performance at the individual, team, and organizational level (Hagen, 2012; Liu & Batt, 2010). Thus, the study may provide additional support to those seeking to promote the use of managerial coaching behaviors within their organizations by managers. Further, the study may provide insight for the development of training programs on managerial coaching for organizations.

From a scholarly perspective, this study extends the research in several domains. First, this study adds to the extensive research on work engagement by including an understudied population, virtual workers. Next, the study adds to the existing research on Information and Communication Technologies. Specifically, this study extends the work of Sardeshmukh et al. (2012) by considering the relationship of leaders' use of media-rich electronic communication upon virtual workers' engagement. In addition, Hill, Kang, and Seo (2014) called for further research into leadership, electronic communication, and their influence upon work outcomes. Work engagement may be an element missing from

the model proposed by Hill et al. (2014) on leader-member exchange theory and psychological empowerment.

The study explored managerial coaching in the virtual work setting expanding the literature in this area. Hagen (2012) called for more research around how coaching impacts organizational outcomes as these findings may influence decision makers to provide further support for managerial coaching within organizations. Further, the study expanded upon virtual or e-coaching by providing insight into how this is perceived by the virtual worker thereby filling a gap in the existing literature (Beattie et al., 2014; Filsinger, 2014). The study may also help to provide support to scholars seeking to understand the role of coaching within an organization.

Finally, this study adds to the literature on the job demands resources theory. The job demands resources theory has been studied extensively and been generalizable across different counties and occupational settings (Llorens, Bakker, Schaufeli, & Salanova, 2006). However, it has had limited application to fully remote virtual workers (Sardeshmukh et al., 2012). The study provides further support of the robustness of this theory in multiple settings.

Research Questions

There are seven research questions associated with the research problem.

RQ1. Are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers?

RQ2. Are e-leaders' managerial coaching behaviors related to average scores of work engagement in virtual workers?

RQ3. What is the relationship between length of employment and average scores of work engagement among virtual workers?

RQ4. When length of employment is held constant, will the interaction of e-leaders' use of electronic communication and managerial coaching behaviors be related to average scores of work engagement in virtual workers?

RQ5. When e-leaders' managerial coaching behavior is held constant, will the interaction of e-leaders' use of electronic communication and length of employment be related to average scores of work engagement in virtual workers?

RQ6. When e-leaders' use of electronic communication is held constant, will the interaction of e-leaders' managerial coaching behavior and length of employment be related to average scores of work engagement in virtual workers?

RQ7. Will the interaction of e-leaders' use of electronic communication, managerial coaching behavior, and length of employment be related to average scores of work engagement in virtual workers?

Definition of Terms

The population of interest and variables of this study are defined as follows.

Electronic Communication

Electronic communication describes communications that utilize information and communication technologies (ICT) instead of in-person, face-to-face communication. Understanding the media-richness of electronic communication used by remote leaders

that most effectively promoted work engagement in virtual workers was a primary goal of this study. The construct of electronic communication is operationalized by the media of electronic communication primarily used between the e-leader and virtual worker. The participants were asked to identify how most of his or her communication with his or her immediate supervisor occurred: primarily (over 50%) through the use of text-based communication such as IM, e-mail, or text messages or primarily (over 50%) through the use of voice/video-based communication such as phone, video conferences, Facetime or Skype. Thus, there were two levels to this categorical independent variable of electronic communication: respondents whose e-leaders used primarily (over 50%) text-based communication or respondents whose e-leaders used primarily (over 50%) voice/video-based communication. The richness of the ICT used by remote leaders to communicate with remote workers does make a difference in the overall effectiveness of the communications (Hambley et al., 2007; Kelley & Kelloway, 2012). Nonverbal cues may be lost or greatly reduced in computer mediated communication. Research on text-based (e.g., e-mail) communication indicated that expectances, stereotypes, and negative preconceptions may cause information to be misinterpreted (Epley & Kruger, 2005). Hill et al. (2014) found that the degree of electronic communication impacted leadership in a virtual work environment. This variable was appropriate for the study in that it provided insight into how the degree of electronic communication related to virtual worker's levels of work engagement.

Length of Employment

Length of employment refers to the participant's time working as a virtual worker in their current position. Operationally, it is measured as an ordinal variable with three levels: less than 2 years in the same position, 2 to 5 years in the same position, or more than 5 years in the same position. This study adds to the existing research by incorporating the variable of time in the virtual position.

Manager Coaching Behaviors

Manager Coaching Behaviors are defined to be coaching behaviors exhibited by e-leaders as perceived by the virtual worker. These coaching behaviors were operationalized by the Ellinger Behavioral scale (Ellinger et al., 2003). Examples of coaching behaviors measured include the leader's use of analogies or examples to help the virtual worker learn, the leader providing resources so the virtual worker can perform his or her job more effectively, or the leader asking questions to help the virtual worker think things through rather than just providing solutions. The Ellinger Behavioral scale (Ellinger et al., 2003) used a Likert scale from one to six, where one equaled strongly disagree and six equaled strongly agree (Hagen & Peterson, 2015). This extends the existing literature on managerial coaching to include e-leaders and virtual workers as recommended by Beattie et al. (2014). Hagen and Peterson (2015) contended that identifying coaching expertise was central to leadership in terms of performance. Coaching behaviors that impact work engagement may help to further validate what constitutes managerial coaching expertise.

Work Engagement

The operational definition developed by Schaufeli, Salanova, et al. (2002) for *work engagement* as a "positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption" (p. 74) was used in this study. Vigor is described as a high degree of energy, mental resilience, willingness, and ability to invest in one's work (Maslach, Schaufeli, & Leiter, 2001; Schaufeli, Martinez, Pinto, Salanova & Bakker, 2002; Schaufeli, Salanova, et al., 2002). Dedication is described as a sense of involvement and significance with work, pride, enthusiasm, challenge, and inspiration in one's work (Maslach et al., 2001; Schaufeli, Martinez, et al., 2002; Schaufeli, Salanova, et al., 2002). Absorption is described as immersion in work, losing track of time, pleasantly and willingly engrossed in work (Maslach et al., 2001; Schaufeli, Martinez, et al., 2002; Schaufeli, Salanova, et al., 2002). Work engagement was operationalized using the nine-item Utrecht Work Engagement Scale (UWES, Schaufeli & Bakker, 2004b; Schaufeli, Salanova, et al., 2002). The UWES is a self-report questionnaire and has been used extensively to study engagement in multiple cultures and organizational settings (Byrne, Peters, & Weston, 2106). The UWES is the most commonly used scale to assess work engagement (Bakker, 2011). According to the theory proposed by Schaufeli, Salanova, et al. (2002) work engagement is regarded as work that produces vigor, dedication, and absorption within the worker. While all three factors are used in the UWES to assess work engagement, only the composite score of the 9-item UWES was used in this study.

Virtual Worker

Belle, Burley, and Long (2015) referred to workers performing full-time work at home for at least 3 out of five days as *high-intensity teleworkers*. However, this definition did not allow for that unique group of *virtual workers* who routinely work full time from home. For purposes of this study, virtual workers were defined as knowledge or technical full-time employees who routinely worked remotely from a home office five days per week with limited in-person interaction with a supervisor. Full-time employment was defined as working an average of 40 hours per week. Self-employed individuals were not considered for this study.

Research Design

A quantitative correlational approach was appropriate for this study because there were existing theories supporting the research (Leedy & Ormrod, 2016). These theories have established constructs and validated instruments were identified with which to conduct the study. The study used a non-experimental design. The population of interest was knowledge or technical workers who work in a home office five days per week with limited in-person interaction with their supervisor. It would not be logistically possible to simulate these conditions in a controlled environment so the non-experimental approach was appropriate.

The study incorporated a non-experimental design using survey data. An independent factorial analysis of variance (ANOVA) research design was used. Further, IBM Statistics SPSS 22 was used for the data analysis. According to Warner (2013), factorial ANOVA is appropriate when two or more group membership variables are used

to predict scores on one quantitative outcome variable such as scores on the Utrecht Worker Engagement Scale (UWES; Schaufeli, Salanova, et al., 2002). In this study, there were 18 groups made up of the predictor or independent variables. The independent variables were electronic communication (Factor A) used between the e-leader and virtual worker with two levels, primarily (over 50%) text-based or primarily (over 50%) voice/video; the perceived coaching behavior (Factor B) displayed by the e-leader with three levels; and the length of employment (Factor C) of the virtual worker made up of three levels. The quantitative outcome variable was the level of work engagement as measured by the UWES.

Assumptions and Limitations

Assumptions

It was assumed that participants in the web-based survey responded accurately and without bias. Tests of assumptions appropriate for the ANOVA were completed and will be discussed in detail in later sections of the study.

The study incorporated the use of two primary instruments, the UWES and the Ellinger Behavioral Scale. The UWES was utilized based upon the assumption that the work *activity,* rather than the work role, can be directly influenced by the supervisor and measures engagement (Schaufeli & Bakker, 2010). This view of engagement aligns with the researcher's identification with the JD-R model and theoretical understanding of work engagement for purposes of this study. Further, the Ellinger Behavioral Scale was utilized as part of this study because it assessed the leader's behaviors as perceived by the virtual worker. Both of these theoretical underpinnings are expanded upon in Chapter 2.

Limitations

There were also limitations to the study as it was conducted. A key limitation to this study was the use of self-report data from virtual workers only. Two challenges with this type of data are careless or acquiescence responding (Kam & Meyer, 2015) and common method variance (Simmering, Fuller, Richardson, Ocal, & Atinc, 2015). Careless responding are responses from participants without due consideration for the actual question being asked while acquiescence responding is the tendency to agree with every questions or statements (Kam & Meyer, 2015). Common method variances are those variances attributed to data collection methods (Simmering et al., 2015).

An additional limitation was the non-experimental design of the study. With this design, causation cannot be determined. Instead, the study looked at the statistical significance of the relationships that existed between the variables. The inferences from the findings are generalizable only to the population of interest identified (i.e., virtual workers as defined in the study) (Teddlie & Yu, 2007).

There were a few delimitations to the study as well. The study delimitated virtual workers as working five days per week from a home office. However, there are many variations in work arrangements among virtual workers (ter Hoeven & van Zoonen, 2015). Further, the e-leaders' perspective or input was not considered as part of the study. With the ready availability of media-rich technology, it would have added to the rigor of the study to ascertain why e-leaders may opt to use text-based electronic communication over more media-rich options. In addition, virtual workers were not

asked about their use of electronic communication when initiating communication with the leader.

Conclusion

There are five chapters to this dissertation. An overview of the topic of work engagement and the purpose and significance of the study were presented in this first chapter. The research questions were identified and key terms under consideration were defined. The research design as well as the assumptions and limitations of the study were also briefly outlined in this chapter.

Organization of the Remainder of the Study

Greater details related to the supporting literature, research methodology, data analysis, and results of the completed study are provided in the remaining four chapters of this dissertation. A comprehensive review of the literature on work engagement, e-leadership, electronic communications, managerial coaching behaviors, and the job demands resources theory are provided in Chapter 2. In Chapter 3, the methodology used in the study is explained with specific information related to the procedures used for sample selection and data collection. The data analyses are discussed in Chapter 4. The dissertation concludes with an interpretation and application of the study's results, significant findings, implications, and recommendations for further study in Chapter 5.

CHAPTER 2. LITERATURE REVIEW

The purpose of this scholarly literature review was to explore the theoretical and empirical basis for how certain e-leaders' behaviors (i.e., choice of electronic communication media and manager coaching behaviors) and virtual workers' length of employment related to the virtual workers' levels of engagement. An overview of the search methods utilized as part of the study is included. The specific topics reviewed included the theory of engagement, the job demands resources theory, work engagement, e-leadership, electronic communication, managerial coaching, and virtual workers. In addition, the chapter includes a synthesis of the research findings and a critique of previous research methods.

Methods of Searching

The sources identified as part of this study emerged over the course of 3 years and continued as Chapter 1 and 2 were drafted. The following databases were utilized to procure scholarly journal articles relevant to the current study: PsycARTICLES, PsycINFO, ProQuest, SAGE, EBSCOHOST, ProQuest Dissertations & Theses, and Capella Dissertations. The following key words and terms were initially searched in the aforementioned databases: *employee engagement, work engagement, organizational engagement, job engagement, engagement, Utrecht Work Engagement Scale, Job Demands Resources Model, Job Demands Resources Theory, teleworker, virtual worker, remote worker, distributed workers, virtual teams, leadership, e-leadership, virtual*

leadership, virtual team leadership, advanced information technology, information and communication technology, electronic communications, coaching, leadership coaching, managerial coaching, and *manager coaching.* Initially abstracts were reviewed to identify articles that were relevant to the topic of leaders' relationship with work engagement of virtual workers. As the topic continued to evolve and articles were reviewed, additional sources were identified from references used in those articles. When particular researchers' names appeared repeatedly in the literature, new searches in the Capella Library and Google Scholar were conducted using those individuals' names to yield additional relevant literature.

Theoretical Orientation for the Study

Theory of Engagement

A shift within the field of psychology occurred in the late 1990s towards a more positive outlook, which resulted in researchers moving from looking at phenomena through a lens of pathology or dysfunction and instead focusing upon human strengths (Seligman & Csikszentmihalyi, 2000). Research on burnout, a topic of much interest to industrial and organizational psychologists from the 1970s through the 1990s, also shifted. Interest arose among researchers in what was viewed to be the opposite of burnout, engagement (Kahn, 1990; Maslach & Leiter, 1997; Maslach et al., 2001; Schaufeli, Martinez, et al., 2002; Schaufeli, Salanova, et al., 2002).

A qualitative study by Kahn (1990) on the psychological conditions of personal engagement and disengagement at work was one of the first attempts to study and define engagement in the work place. Using a grounded theory approach, Kahn (1990)

attempted to identify the psychological conditions in which people engage and disengage at work. According to Kahn (1990), the following three conditions influence how engaged one is at work: meaningfulness, safety, and availability. Meaningfulness occurs, as one feels valued and useful; that the work one performs is appreciated and purposeful (Kahn, 1990). Safety occurs when one feels supported and trusting within the context of interpersonal relationships and groups in the work place. Safety extends into supportive managerial or leader environments and understanding of organizational norms (Kahn, 1990). Availability occurs as one has the physical, emotional or psychological resources required for performance at a given time (Kahn, 1990). Kahn (1990, 1992) argued that engagement was defined as one's psychological presence or focus on the work *role*. As such, the whole person must be taken into consideration when framing theory and research. Rothbard (2001) expanded upon Kahn's research by considering two critical elements of engagement: attention and absorption in a role (i.e., work roles and family roles). While the two elements are related, Rothbard (2001) considered attention and absorption distinct motivational constructs. Attention may be an "invisible, material resource that a person can allocate in multiple ways" (Rothbard, 2001, p. 657). Rothbard also noted absorption is not always a positive emotional state. Further, Rothbard found that within-role emotional responses to engagement may be enriched or depleted by work-to-family or family-to-work roles (2001).

Earlier work on burnout by Maslach et al. (2001) indicated the construct was made up of three dimensions: exhaustion, cynicism, and reduced professional efficacy. Maslach et al. extended their research on burnout by looking at what they considered to

be the opposite of burnout, engagement. Maslach et al. categorized engagement with the following three dimensions: energy, involvement, and efficacy. Maslach et al. indicated that engagement differed from other organizational constructs in that it provided perspective on how the individual identified with and viewed his or her work. Schaufeli, Salanova, et al. (2002) contended that while burnout and engagement are opposites, both are also part of a broader taxonomy that makes up employee well-being. According to Schaufeli, Salanova, et al. (2002), engagement is made up of three dimensions: vigor, dedication, and absorption. While vigor is the opposite of exhaustion and dedication is the opposite of cynicism, absorption and efficacy are not opposites. Schaufeli, Salanova, et al. (2002) and Rothbard (2001) both described absorption as focused concentration similar to the state of *flow* described by Csikszentmihalyi with one becoming so involved in one's work as to lose consciousness of all other thoughts or distractions.

Maslach et al. (2001) and Schaufeli, Salanova, et al. (2002) extended Kahn's (1990, 1992) view on engagement by focusing upon work *activity* in considering engagement. Kahn defined engagement as "the harnessing of organization members' selves to their work *roles*, in engagement people employ and express themselves physically, cognitively, and emotionally during role performance" (1990, p. 694). Schaufeli, Salanova, et al. (2002) described work engagement as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (p. 74). A decade later, Schaufeli and Salanova (2011) provided further insight into their conceptual preference for work engagement over employee engagement when they

indicated work engagement relates to the individual's relationship with his or her work; employee engagement may include the individual's relationship with the organization.

Alternatively, Britt (1999) suggested a completely different view of engagement using the Triangle Model of Responsibility. The Triangle Model consists of transactions or links between events, prescriptions, and identity. Prescriptions are the rules governing the event and identity is the image one has in light of the event. Britt extended the Triangle Model to suggest that the more one identified as responsible and committed during an event, the more engaged one was with the event.

Job Demand Resources Theory

The job demands resources theory served as the secondary theoretical framework for this study. Vogt, Hakanen, Jenny, and Bauer (2016) suggest, "the motivational path to work engagement is most commonly examined in the context of the job demand-resource model" (p. 194). The job demands resources model (Demerouti et al., 2001) was developed to understand how job demands and job resources explained various components of burnout. The model integrated stress and motivation research traditions (Demerouti & Bakker, 2011). The model has proven useful in profiling various job demands and job resources in multiple settings in research (Brauchli, Schaufeli, Jenny, Füllemann, & Bauer, 2013; ter Hoeven & van Zoonen, 2015). The job demands resources model has been used as a research framework for work engagement for the last 15 years. Job demands are those aspects of a job that demand sustained physical or mental efforts and therefore are associated with physiological or psychological costs (Demerouti et al., 2001). Job resources are those aspects of a job that support work goal

attainment, reduce job demands, or support individual growth, learning, or development (Demerouti et al., 2001).

Over time, the job demands resource model evolved into the job demands resources theory with eight propositions (Bakker & Demerouti, 2016). Proposition 1 has briefly been described in that all jobs have characteristics that can fall into one of two categories: job demands or job resources (Bakker & Demerouti, 2016). Proposition 2 holds that job demands and resources result in two different processes. One process is a health-impairment process leading to burnout; the second is a motivational process leading to engagement (Bakker & Demerouti, 2016). Proposition 3 of the theory is that job resources may offset the effects of job demands (Bakker & Demerouti, 2016). Proposition 4 contends that job resources particularly effect motivation when job demands are high (Bakker & Demerouti, 2016). Similar to Proposition 3, Proposition 5 introduced the idea that personal resources, such as self-efficacy, also may offset the effects of job demands (Bakker & Demerouti, 2016). Proposition 6 is that motivation positively impacts performance while job strain has a negative impact upon performance (Bakker & Demerouti, 2016). Propositions 7 and 8 were articulated following 10 years of research on the job demands-resource model (Bakker & Demerouti, 2016). Proposition 7 contends that motivated employees may use job crafting strategies which result in increased job and personal resources and increased motivation (Bakker & Demerouti, 2016). Alternatively, Proposition 8 contends that stressed employees may use self-undermining behaviors that result in increased job demands and stress (Bakker & Demerouti, 2016).

The job demands resources theory relies in part upon the conservation of resources (COR) theory proposed by Hobfoll (Bakker & Demerouti, 2016; Hobfoll, 2001; van Woerkom, Bakker, & Nishii, 2015; Wright & Hobfoll, 2004). The basic premise of the conservation of resources theory is that "individuals strive to obtain, retain, protect, and foster those things that they value" (Hobfoll, 2001, p. 341). According to the conservation of resources theory, the existence of resources may bring about the development or collection of additional resources (Hobfoll, 2001). Alternatively, the loss of resources to cope with a demand may reduce one's ability to deal with another demand resulting in a spiral effect (Hobfoll, 2001). The job demands resources theory served as the major lens through which the research problem and questions related to work engagement were viewed for the current study.

Review of the Literature

The literature review to follow provides a systematic overview of the construct of work engagement, the research around antecedents and outcomes of work engagement, and other variables identified as part of this study. Specifically, the literature on e-leadership and electronic communications and the literature on managerial coaching are reviewed. Literature on virtual workers and length of employment are also reviewed. In addition, the literature on the measures are identified in the appropriate sections noted above and the rationale for use of each measure is provided. The process of reviewing the literature provided the framework for establishing the research questions of this study.

Work Engagement

The construct of work engagement. While the theory of engagement emerged from Kahn's (1990) qualitative study, a review of the literature demonstrated that the construct has taken time to be recognized as a distinct and "useful construct meriting further attention" (Christian et al, 2011, p. 125). Maslach et al. (2001) contended engagement was a distinct construct from other constructs such as organizational commitment, job satisfaction, or job involvement and useful for understanding employee well-being. Macey and Schneider (2008) highlighted questions about the unique nature of the construct and pointed out the need for further development and measurements of the construct. In response to Macey and Schneider (2008), Newman and Harrison (2008) argued that work engagement is not a unique construct and instead proposed it is likely part of a higher order job attitude construct consisting also of job satisfaction, organizational commitment, and job involvement. As part of this higher order job attitude construct, Newman and Harrison (2008) suggested work engagement is a latent concept that promotes positive behavioral outcomes. Newman and Harrison (2008) contrasted items from the Utrecht Work Engagement (UWES) scale referenced by Macey and Schneider (2008) against the Organizational Commitment Scale, the Overall Job Satisfaction scale, the Job Affect scale, Positive and Negative Affect Schedule, Job Involvement questionnaire, Job Involvement scale, and Work Involvement questionnaire. However, Harrison, Newman, and Roth (2006) did not include the UWES or any engagement measures in their 2006 meta-analyses comparison on a job attitudes made up of job satisfaction and organizational commitment.

Hallberg and Schaufeli (2006) found empirical evidence to indicate work engagement was a related yet distinct construct from job involvement and organizational commitment. In their study using Confirmatory Factor Analyses (CFA) on a sample consisting of 186 international IT, project managers, and management consultants on employee health and motivation, Hallberg and Schaufeli (2006) distinguished the three constructs as unique and distinct. Job satisfaction measures indicate the degree to which individuals are satisfied with their work yet does not account for the active absorption aspect of engagement (Macey & Schneider, 2008). Karanika-Murray, Duncan, Pontes, and Griffiths (2015) found work engagement mediated the relationship between organizational identification and job satisfaction in their study of 177 employees from three United Kingdom organizations. However, this study did not directly compare work engagement with job satisfaction. Saks (2006) contended that while practitioners may conflate the construct with other measures, the academic literature is clear in considering engagement "a distinct and unique construct that consists of cognitive, emotional and behavioral components that are associated with individual performance" (p. 602).

Wefald, Reichard, and Serrano (2011) found that engagement was related to positive affect and personality. In a study of 382 employees and managers from a midsized financial institution, Wefald et al. attempted to "delineate the positioning of work engagement in the larger nomological network of both antecedent and outcome variables in order to further" understanding of the construct of work engagement. Using three different work engagement scales, the researchers found that work engagement was positively related to affective commitment and job satisfaction while negatively related to

intentions to leave. In addition, Wefald et al. found that work engagement, as measured by the UWES, mediated the effects of Conscientiousness and Extraversion on job satisfaction and affective commitment. Wefald et al. did not find support for work engagement mediating the relationship between perceived organizational support and work outcomes. The researchers suggested that the immediate supervisor held more influence upon work engagement, an individual-level construct, than the macro construct of organizational support. The current study considers the effect of the e-leader's behaviors upon work engagement.

Antecedents of work engagement. Understanding predictors of work engagement is a significant contribution to the body of the literature on the subject and has both theoretical and practical implications. This included studies conducted at the individual level to identify specific characteristics of individuals leading to work engagement. Langelaan, Bakker, van Doornen, and Schaufeli (2006) used discriminant analysis to determine if personality and temperament affect work engagement. Their findings, based upon a sample of 572 Dutch employees, suggested workers high on extraversion and low on neuroticism are likely to have higher levels of work engagement. Llorens, Schaufeli, Bakker, and Salanova (2007) conducted a two wave experimental study with 110 psychology students in Spain to assess the effects of personal resources (i.e., self efficacy beliefs) upon task resources and work engagement. Their findings provided support for the "gain spiral" aspect of the COR theory, which is an underlying theory to the JD-R theory, and indicated that efficacy beliefs, task resources, and work engagement had reciprocal effects over time. The role of self-efficacy appeared to be

supported in later studies by Salanova, Llorens, and Schaufeli (2011) and Chaudhary (2014). Bledow, Schmitt, Frese, and Kühnel (2011) used experience sampling to test their affective model of work engagement with 55 software developers over a period of 9 days. The Bledow et al. study showed that those with high positive affect were more successful in buffering short-term consequences of negative events in the work place that might affect work engagement. Recognizing the work environment has become more flexible; Breevaart, Bakker, and Demerouti (2014) looked at the effect of self-management upon work engagement to see if employees could independently influence their own daily work engagement. This study consisted of a sample of 72 Dutch maternity nurses who work independently without daily interaction with a leader. Participants were asked to complete an online questionnaire for five consecutive working days. Breevaart et al. (2014) found that those participants using self-management strategies had more resources and heightened work engagement. The Breevaart et al. (2014) study is of particular significance to the current study in that it is the first to consider an employee group with no daily interaction with the leader. The current study considers virtual employees without daily face-to-face interaction with a leader.

Numerous studies also were conducted at the job and organizational levels and identified various job resources, which promoted work engagement (Demerouti & Bakker, 2011). These include job resources such as job control (Hakanen, Bakker, & Schaufeli, 2006; Mauno, Kinnunen, & Ruokolainen, 2007), access to information, good organizational climate (Hakanen et al., 2006), and supervisor support (May, Gilson, & Harter, 2004). Bakker and Bal (2010), in a study examining the relationships between

job resources, work engagement, and job performance among a sample of teachers, found that feedback and coaching from supervisors positively related to work engagement. The findings from Bakker and Bal (2010) related to feedback and coaching from a supervisor upon work engagement is relevant to the current study on e-leaders coaching of virtual workers. Two studies conducted by Rudolph and Baltes (2016) found that access to and use of flexible work arrangements (FWA) had a positive influence on work engagement. Further the frequent use of FWA's, such as virtual work, were also found to positively affect work engagement. In their first study, Rudolph and Baltes (2016) collected data from the Sloan Center on Aging and Work's Age and Generations Study. This provided a sample at Time 1 and Time 2 of 838 participants. In their second study, Rudolph and Baltes (2016) utilized Qualtrics Panels to recruit a sample of 1372 at Time 1 and 667 at Time 2. The Rudolph and Baltes study was particularly relevant to current study for two reasons. First, the study provided insight into flexible work arrangements and work engagement; the current study was made up of virtual workers, which may be considered a form of a FWA's. Second, the Rudolph and Baltes (2016) study was the only article identified and published in a peer reviewed journal that utilized Qualtrics Panel to recruit a sample; the current study also used Qualtrics Panel to recruit participants.

Similar to the May et al. (2004) study, several articles were identified that further demonstrated the importance of leadership upon worker engagement. Vogelgesang, Leroy, and Avolio (2013) studied the effect of leader integrity on follower work engagement among 451 military cadets over the course of three months. Vogelgesang et al. (2013) found that leader communication transparency was related to behavioral

integrity and positively influence work engagement in followers. Allen and Rogelberg (2013) provided practical insight into how managers who make meetings relevant to employees and start and end meetings on time promote engagement among workers. In a quasi-experimental study involving two organizations, Biggs, Brough, and Barbour (2013) found that an intervention focused upon enhancing leadership behaviors resulted in positive effects on work engagement. The Biggs et al. (2013) study included 368 participants of which, 222 were in a control group, and 146 participated in the intervention. Kopperud et al. (2014) conducted two studies on transformational leaderships' impact upon work engagement and service climate. Consistent with other findings (Breevaart et al., 2014), Kopperud et al. (2014) found engagement "partially mediated the relationship between transformational leadership and service climate" (p. 37). What was noteworthy in the Kopperud et al. study was that transformational leadership only had this effect when the leader was perceived by the employee to be a transformational leader. In a study using hierarchical regression analyses by Strom, Sears, and Kelly (2014), leadership served as a moderator between organizational justice and work engagement with engagement being stronger when employees indicated leadership styles were less transactional. Strom et al. (2014) suggested that employees are more likely to engage when organizational leaders fulfill responsibilities such as organizational justice and provide motivating environments in which to work. The current study extends the literature on leadership and work engagement by considering e-leader behaviors in the virtual work environment.

Outcomes of work engagement. The literature review on work engagement indicated important outcomes at both the individual and organizational level. Schneider et al. (2009) found engagement, as reported by peer observers, to be related to customer satisfaction and financial profits. Christian et al. (2011) conducted a quantitative review and meta-analytic path modeling to delineate work engagements relationship with similar constructs, antecedents and outcomes. Christian et al. (2011) found engagement to have "significant relations with in-role and discretionary work performance" (p. 123). With in-role performance referred to duties performed on the job more efficient or effectively. Discretionary or contextual performance referred to behaviors such as teamwork and helping, which support organizational effectiveness (Christian et al., 2011). In a study on workplace relationships, Halgin, Gopalakrishnan, and Borgatti (2015) conducted interviews with managers at a global high-tech firm followed by a survey among a 62 person globally disbursed account team. The response rate was 92% with 57 of those contacted participating. Halgin et al. (2015) completed a binary person-by-person matrix to identify dyadic networks and the strength of those networks among participants. Halgin et al. contended that networked individuals, workers working with others virtually despite geographic separation, required individual initiative and must be collaborative without management direction. In their analysis of a globally distributed team, Halgin et al. (2015) found that workers with higher levels of work engagement not only recognized the need for global ties, these engaged workers took action to cultivate those ties more than their less engaged peers. The current study does not directly consider outcomes of work engagement.

Measuring work engagement. With few exceptions, most of the studies identified in the literature review utilized the Utrecht Work Engagement scale (Schaufeli, Salanova, et al., 2002) to measure work engagement. Byrne et al. (2106) noted that the UWES is one of the most popular measures of work engagement with scholars. The Byrne et al. study compared the UWES with the Job Engagement Scale (JES; Rich, LePine, & Crawford, 2010) and showed that while related, the two scales do measure differing aspects of the work engagement construct. The researchers recognized differences in the theoretical frameworks used as a backdrop for the development of each scale. Specifically, the authors cite Schaufeli, Salanova, et al. (2002) view of engagement as the opposite of burnout in the development of the UWES and Kahn's (1990) view of engagement used by Rich et al. (2010) in the development of the JES. However, Maslach and Leiter (1997) characterized engagement as the opposite of burnout; Schaufeli, Salanova, et al. (2002) conceptualized engagement having two underlying dimensions in common with burnout: activation and identification. Activation can range from exhaustion to vigor and identification can range from cynicism to dedication; with exhaustion and cynicism making up two of the three elements of burnout while vigor and dedication make up two of the three elements of engagement. Schaufeli, Salanova, et al. (2002) noted the third elements of burnout and engagement, efficacy and absorption were distinct elements which would suggest that burnout and engagement, while negatively related, were not exact opposites. Further, Schaufeli, Salanova, et al. (2002) detailed Kahn's theory on engagement, noted Kahn's definition of engagement included personally engaging behaviors of the individual, and pointed out

that Kahn's theory was not operationalized. Kahn's (1990) theory does not appear to have been dismissed by Schaufeli, Salanova, et al. (2002); rather it appears to have been part of the theoretical framework upon which the Schaufeli, Salanova, et al. study was based. In a later commentary on the construct of work engagement, Schaufeli and Salanova (2011) clearly indicated the definition provided with the development of the UWES was an operational definition of work engagement (activity), not employee engagement (role). Work engagement is negatively related to burnout but not an exact opposite of burnout (Schaufeli & Salanova, 2011). The JES conceptually maps directly to the physical, emotional, and cognitive aspects of engagement addressed by Kahn's original article (Rich et al., 2010). The result of the JES is a measurement of employee engagement of the work role, not a measure of engagement with the work activity. Supervisors may impact an individual's engagement with the work activity. However, supervisors may or may not have influence over organizational level resources or benefits that impact the individual's view of his or her role with the organization.

Consistent with other research in this area, the UWES was used to measure work engagement in the current study. Schaufeli and Bakker (2004a) used it to demonstrate that job resources predict worker engagement. Chughtai and Buckley (2011) used the UWES to better understand the relationship between worker engagement, learning goal orientation and job performance. Wefald et al. (2011) used two other work engagement inventories and the UWES to show a strong relationship between engagement and personality. Bakker, Demerouti, and ten Brummelhuis (2012) used the UWES to study the link between conscientiousness and work engagement, performance, and active

learning. Breevaart, Bakker, Demerouti, and Hetland (2012) used it to study work engagement at both the trait-between person and the state-within person levels. The UWES, a self-report questionnaire, has been reproduced in several languages.

The studies cited previously and comparisons with other instruments by Christian et al. (2011) and DeBruin and Henn (2013) provided strong support for the psychometric properties of the UWES. Multiple studies have demonstrated validity in showing work engagement is negatively associated with burnout. The delivery methods for the UWES-9 in some of the studies identified have incorporated web-based questionnaires; however, differences in validity and reliability due to the delivery method have not been noted.

E-leadership and Electronic Communications

The literature review also considered leadership and electronic communications. Advanced information technology (AIT) has changed the way leaders interact with followers (Avolio et al., 2014). These changes have both positive and negative effects often far beyond what the developers of the technology ever envisioned (Avolio et al., 2014; Cameron & Webster, 2005). For example, technologies initially designed for social interactions, such as Facebook, are repurposed for recruiting, marketing, and market research purposes. Conversely, these same technologies can become a public relations nightmare when a recorded interaction 'goes viral'. The term e-leadership emerged at the turn of the century when Avolio, Kahai, and Dodge (2000) described it as "a social influence process mediated by AIT to produce a change in attitudes, feelings, thinking, behavior, and performance with individuals, groups, and/or organizations" (p. 617).

Several studies in the literature review indicated that leadership in the virtual work environment is complex and differs from traditional face-to-face work environments. Traditional predictors of leadership such as the personality trait of extraversion have not proved to be predictors of leader emergence in the virtual work environment (Balthazard, Waldman, & Warren, 2009). Balthazard et al. (2009) conducted an experimental study of 252 undergraduate business students to identify traits or qualities that predicted perceived leader emergence by other team members through hierarchical linear modeling. Through random assignment, 127 students were assigned to 29 virtual teams while the remaining 135 students were assigned to the control group acting in 32 traditional face-to-face teams. They concluded that the volume and grammatical complexity of the communication affected perceived leader emergence by other team members. The Balthazard et al. (2009) study appeared to support earlier field research from Zimmerman, Witt, and Gill (2008). In the Zimmerman et al. study, 412 global employees from Shell GSI responded to a 30-item web-based survey on leader behaviors in face-to-face and virtual interactions. This study indicated that the degree of virtualness (i.e., the amount of time spent engaged in virtual interactions) affected the extent to which some of the behaviors were considered more important. Further, the Zimmerman et al. study suggested that virtual leaders must possess advanced writing skills. Fan, Chen, Wang, and Chen (2014) found that leaders intentional use of motivational language and feedback in e-mail may enhance creativity and task performance in virtual team members. In a quasi-experimental study with three cohorts from a leadership development program, Kolb, Prussia, and Francoeur (2009) found that

social connectivity and technical connectivity and the interaction between the two were significant predictors of leader effectiveness. Social connectivity is the quality of the contact with others while technical connectivity is the richness of the media. Relative to the current study, supervisors using primarily text-based communication with advanced writing skills (Zimmerman et al. 2008) and who utilize motivational language (Fan et al., 2014), may provide supportive coaching behaviors, which promote work engagement in virtual workers.

The literature review indicated that written text is not the only consideration for e-leaders. Early research from Sarker and Sahay (2004) suggested that reducing challenges associated with time and space issues among virtual teams and workers requires both technical and social considerations. The Sarker and Sahay (2004) study was made up of students from two universities, one in the United States and one in Norway, randomly assigned to eight virtual teams. The space issues that arose for the teams related to distributed locations, cultural practices, and differing technologies. The time issues that arose for the teams were related to differences in schedules, vigilance in translation of local times, and delayed response time, which were both unproductive and interpreted negatively (Sarker & Sahay, 2004). Polychronicity or polychromic communications refer to simultaneous conversations often using various types of media (Cameron & Webster, 2005; Sarker & Sahay, 2004). E-leaders and virtual workers often engage in polychromic communication such as instant messaging or e-mailing website links or documents while engaging in a discussion on a conference call. Kelley and Kelloway (2012) found that the context (in terms of perceived control over surroundings, knowledge of the

supervisors, and planned and unplanned communications) matter when managing remote workers. In a study of 402 working professionals, of which 34% had face-to-face interaction with their managers two to three times per month or less, Kelley and Kelloway found that remotely managed employees have a lower level of unplanned communication than employees managed in a traditional work environment. In addition, remotely managed employees may have less communication overall than those in a traditional work environment.

Multiple studies on the choice and impact of electronic communications used in the virtual work environment were identified as part of the literature review. Early work by Daft and Lengel (1986) contended that rich media involved personal face-to-face contact and was used to communicate difficult or equivocal messages while less rich media were needed and appropriate for communicating "well understood messages and standard data" (p. 560). However, technology has expanded the forms of media available since 1986. According to Cameron and Webster (2005), "rich media are those that provide instant feedback, allow for verbal and non-verbal cues, use natural language, and convey emotion" (p. 91). In a qualitative study with 19 employees from four different organizations, Cameron and Webster (2005) found that instant messaging (IM) proved to be quick, impersonal, and convenient. However, overall interviewees did not find IM supportive of communicating ambiguous ideas or concepts in that it was not deemed to be a very rich medium (Cameron & Webster, 2005). In a series of three experiments using undergraduate students, Epley and Kruger (2005) found that text-based media, considered to be less rich, is more likely to be misinterpreted due to the receiver's

expectancies and stereotypes. Text-based communication, such as e-mail, is more ambiguous than voice communication. Voice communication allows for paralinguistic cues such as inflection, pronunciation, vocal expression, fluency, and tone all of which provide added meaning to the receiver (Epley & Kruger, 2005). In the absence of these cues, individuals using electronic communications "fill in the blanks" (Epley & Kruger, 2005, p. 418). Hill et al. (2014) found that the degree of electronic communication impacted the importance of leadership in a virtual work environment. With a sample of 353 full-time employed MBA professionals from a large university in the United States, Hill et al. assessed the degree of electronic communications by asking participants to report on the percentage of interactions that occurred using different media. The intent of this study was to understand the role of leadership in promoting positive psychological states and work outcomes among employees using high degrees of electronic communication. Findings from this study indicated "heightened importance of leadership in promoting positive work outcomes in more virtual work environments" (Hill et al., 2013, p. 780). The current study measured virtual workers perception of e-leader electronic communication behaviors.

Managerial Coaching

Managerial coaching background. *Coaching* is a broad term often used interchangeably with mentoring and counseling yet there are distinct differences between the three (Ellinger & Kim, 2014). Counseling is typically a process focused upon recovery from past events whereby a licensed professional provides services to a patient (Ellinger & Kim, 2014); mentoring is typically a relationship involving a more seasoned

professional providing long-term career development and support to a less experienced protégé (Passman, 2007). Coaching is focused upon current or future goals (Ellinger & Kim, 2014). Coaching in organizational settings is often categorized as executive coaching or managerial coaching (Hagen, 2012).

According to Kilburg (2016) executive coaching emerged as a subdiscipline of consulting services following the Second World War as leadership development programs and multirater feedback systems became more prominent. Seasoned professionals or experts work with individual leaders to develop areas in which the leader needs improvement (Kilburg, 2016). Often these seasoned professionals are external consultants contracted for their expertise in a given area (Kilburg, 2016). Managerial coaching is similar to executive coaching in that performance improvement is often a focus of the coaching effort; however, managerial coaching is also focused upon "training, development, and retention of employees" (Hagen, 2012, p. 20). Another distinction between executive and managerial coaching is the degree of autonomy in the selection of a coach. While executives often have input or sole discretion into the selection of a coach, employees rarely have the opportunity to select their managers or supervisors (Gregory & Levy, 2010).

Almost 3 decades ago, Evered and Selman (1989) called for a shift in the management paradigm from command and control to one of partnership and collaboration based in large part on creating a coaching culture. Suggesting coaching was not a subset of management but the heart of management, Evered and Selman (1989) contended that to be truly effective managers, coaching was an essential management

task. Heslin, Vandewalle, and Latham (2006) agreed that coaching was an essential element of the manager/employee relationship. Steelman and Wolfeld (2016) contended, "the manager-as-coach is a critical component of organizational performance management processes" (p. 2).

A review of the literature provides a variety of definitions for managerial coaching. Indeed Hamblin, Ellinger, and Beattie (2008) identified 37 definitions of coaching after a comprehensive literature reviews. Hagan (2010) indicated "managerial coaching is a process by which a manager or another individual with a supervisory role, through guided discussions and guided activity, helps a member of his or her staff solve a problem or carry out a task more efficiently or more effectively" (p. 55). However, this definition lacks reference to the role of talent management or development, which is also a goal of managerial coaching (Gregory & Levy, 2011; Hagen, 2012). Gregory and Levy (2010) define managerial coaching as "a developmental activity" where the employee works directly with the manager to improve current performance or to develop competencies for future opportunities. As Heslin et al. (2006) indicated, the common theme amongst the various definitions is that of a manager providing insight to help the employee improve performance and thus demonstrating leadership behaviors to support the employee's growth.

The manager as coach. The literature review on managerial coaching revealed that a manager's personal views and preferences may affect his or her coaching efforts. In a series of three studies, Heslin et al. (2006) found evidence to suggest that the implicit person theory (IPT) and beliefs about one's ability to change may impact a manager's

efforts to coach employees. The first of these studies included a sample of 45 managers enrolled in an MBA program in a southwestern United States university. Prior to beginning an elective module, the managers were asked to complete a web survey to be used in a later class. The survey assessed participants' IPT beliefs. Ten weeks later, participants requested anonymous feedback from 3-10 of their employees via a web survey to assess the participant coaching behaviors. The second study replicated the first yet used part-time students who evaluated coaching behaviors of the students' current or former supervisors. Findings from these studies indicated that managers identified having a more *entity theorists* viewpoint were more likely to assess ability and personality as set or unlikely to change; managers identified as holding a more *incremental theorists* viewpoint assess individuals as more malleable in terms of ability and personality (Heslin et al., 2006). In a study of 103 manager-employee dyads, Steelman and Wolfeld (2016) found that a manager's personal view of coaching affected the nature of the feedback the manager provided to employees. Gregory and Levy (2010) noted that coaching is an element of the overall relationship between the supervisor and employee and contended that the effectiveness of coaching was largely based upon the quality of the relationship between the manager and employee.

The literature review also revealed researchers attempted to identify what leadership behaviors supported effective managerial coaching. Heslin et al. (2006) contended managers as coaches provide feedback, provide role clarity, facilitate goal attainment, and cultivate communication channels. In a cross-cultural comparison, Hamlin et al. (2006) identified universal themes among effective behaviors associated

with embedding coaching into the heart of management practices. Looking at each of the three authors prior independent emic research studies on managerial behavior, this etic study carefully considered functional and semantic equivalences between all three studies (Hamlin et al., 2006). Their findings revealed a "high degree of similarity between all Hamlin's and Ellinger's behavioral categories and eight of the nine Beattie behavioral categories" (Hamlin et al., 2006, p. 325). Collectively these behaviors included such things as providing feedback, advising or guiding, facilitate learning or developing others, and providing resources or information (Hamlin et al., 2006).

The employee as coachee. From the employee's perspective, research by Coultas and Salas (2015) on executive coaching offers insight into the coachee's role in the coaching process. Specifically, Coultas and Salas (2015) contended that coaching structure schemas (CSS) affect the perceptive of the coachee and that the coach's behaviors affect the coachee's perspective on who is responsible for what in the coaching relationship. A coachee with coach-centric CSS is less involved in the coaching process while a coachee-centric CSS will be more engaged in the coaching process (Coultas & Salas, 2015). Coultas and Salas (2015) conceptualized the CSS with consideration to the conflict elaboration theory (CET) suggesting that when information is presented, the coachee initially views the information as a threat. "The relevance of CET to coaching is that varying levels of competence and threat will influence the way in which coaches process information and interact with their coaches" (Coultas & Salas, 2015, p. 302). Within the manager as coach/employee coaching relationship, feedback from the manager may be perceived as a threat to the employee or it may be perceived as an effort

to support the employee's development. An employee with a shared CSS approach may more readily accept and process feedback provided by the manager/coach. An employee with a shared CSS is may be more likely to actively engage with the manager/coach by providing input or ideas.

Managerial coaching outcomes. Empirical studies illustrating the effects of managerial coaching on individual or organizational outcomes were limited. In a study on coaching expertise of black belts and six sigma project outcomes, Hagan (2010) found that coaching expertise was related to customer/project management outcomes. Kim, Egan, Kim, and Kim (2013) examined managerial coaching behaviors effects upon employee role clarity, work attitudes, and performance. Kim et al. (2013) findings indicated managerial coaching was a significant predictor of role clarity, satisfaction with work, career commitment, job performance, and organizational commitment. Conversely, research from Ellinger, Ellinger, Bachrach, Wang, and Elmadağ Baş (2011) offered only limited support for the benefits of managerial coaching in certain context and suggested that employees with more tenure may be more autonomous therefore requiring less levels of managerial coaching.

In addition to further research on managerial coaching outcomes, a gap exists in the literature related to virtual coaching. Bettie et al. (2014) suggested that while e-learning has received attention in the literature, questions remain about the viability of virtual coaching. Further, Bettie et al. (2014) suggested that there may be generational differences in how virtual coaching is received with Baby Boomers being reluctant participants and Gen Y, virtual natives, more ready adaptors. Filsinger (2014) pointed

out that virtual coaching occurs in "both synchronously and asynchronously" forums (p. 194). Virtually mature organizations are likely to have a higher quality of technological resources to support virtual coaching efforts along with more technologically savvy managers and employees using those resources (Filsinger, 2014) resulting in a more effective virtual coaching effort. Pascal, Sass, and Gregory (2015) contended that technology is used more frequently in executive coaching. One observation from Pascal et al. (2015) for managers coaching virtually to take note of is the "tendency to react, rather than provide a thoughtful response" (p. 107) when coaching through electronic communications.

Managerial coaching measures. In the course of the literature review, three measures of managerial coaching were considered for this study. These included the Heslin et al. (2006) Behavioral Observation Scale (BOS), the Gregory and Levy (2010) Perceived Quality of the Employee Coaching Relationship scale (PQECR), and the Ellinger Behavioral scale (Ellinger et al., 2003). In comparing the three scales, an analysis by Hagen and Peterson (2014) provided insight into target domains, item bank properties, validity measures and methods, and reliability testing of all three scales. All three scales had strong reliability and would have added value to the current study. While the quality of the relationship is likely important to the effectiveness of coaching, the actual behaviors displayed by the managers were thought to be more readily assessed by the virtual worker. Therefore, the Gregory and Levy (2010) PQECR, which was based upon the employees' evaluation of the quality of the relationship with the manager, was not selected for use in the current study. The Heslin et al. (2006) BOS was also

given careful consideration for the present study. However, peer reviewed publications using this measures were not identified. Subsequent to IRB approval of this study, a study by Steelman and Wolfeld (2016) was identified using the Heslin et al. (2006) BOS scale.

Virtual Workers

Technology has changed the way people work. Advances in technology allow for more work to be completed or performed via information and communications technology (ICT; Barber & Santuzzi, 2015) from a home office. In 2010, over 13 million workers worked from their home at least one day per week (Mateyka, Rapino, & Landivar, 2012). One in four of these workers were employed in management, business, or financial occupations while those working in computer, engineering and science occupations increased by approximately 69% between 2000 and 2010 (Mateyka et al., 2012). Purvanova (2014) contended that much of the experimental research conducted on virtual teams reported poor outcomes possibly due to the difficulty in simulating the conditions in which virtual team actually work. However, field research and case studies yield different results (Purvanova, 2014). Virtual work was thought to provide savings on facilities, reduced travel costs, and availability of an expanded talent pool (Gajendran, Harrison, & Delaney-Klinger, 2015). However, recent announcements such as Yahoo's 2013 decision to end remote work arrangements may suggest these trends are changing (Gajendran et al., 2015).

Individuals using technology to perform work from locations other than a traditional work environment are referred to in the literature as teleworkers,

telecommuters, virtual workers, remote workers, and other similar terms (Belle et al., 2015; Morganson et al., 2010; Sardeshmukh et al., 2012; Wiesenfeld, Raghuram, & Garud, 1999). Just as there are variations in the name used to identify these workers, there are differences in how the work performed is described. Wiesenfeld et al. (1999) referred to organizational members working together yet "being spatially and temporally decoupled from one another" (p. 777). Morganson et al. (2010) categorized telework as "a broad term used to describe a variety of arrangements that involve working away from the employer's main campus" (p. 579). Some studies refer to teleworkers as those working from satellite or client offices as well as a home office (Golden, Veiga, & Simsek; 2006; Morganson et al., 2010). Belle et al. (2015) defined high-intensity teleworkers as those working full-time at home for at least three out of five days a week. This study focused upon individuals who worked remotely from a home office five days per week using some form of technology.

Much of the research on virtual work has focused upon virtual teams and leadership; research related to the experience or effect of virtual work on the individual has received limited attention in the literature (Sardeshmukh et al., 2012). Golden et al. (2006) findings suggested that the more extensively one telecommutes, the less likely work was to interfere with family and the more likely family was to interfere with work. Golden et al. (2006) suggested their findings were somewhat supportive of Rothbard's (2000) research related to depletion of resources related to work and family roles; however, they further clarified their findings were not limited by gender as were Rothbard's. Gajendran et al. (2015) was the only study identified using the job demands

resources model as a framework and one of the few to look specifically at the effects of virtual work on performance. In a sample of 323 employees and 143 supervisors, Gajendran et al. considered the relationships between *telecommuting intensity* (how many hours per week the individual telecommuted) perceived autonomy, task performance, contextual performance, Leader Member Exchange from the supervisor's perspective, and telecommuting normativeness (workgroup prevalence of telecommuting). The sample was made up a variety of industries. Findings from the Gajendran et al. (2015) study suggested that telecommuting has a beneficial association with performance and that these positive outcomes were based upon the supervisors-employee relationship quality and prevalence of telecommuting in the workgroup (normativeness).

Synthesis of the Research Findings

Findings from the literature provided insights into work engagement and the job demands resources model. The themes and inconsistencies identified in the literature review are discussed in the following section. Conclusions from the research that provided the framework for the current study are provided.

Themes

The Job Demands-Resource model/theory. The literature depicted the evolution of the job demands-resource model as it evolved into a more formalized theory. Contrary to the original job demands-resources model, researchers identified reciprocal relationships between resources and work engagement. In a longitudinal study, Xanthopoulou et al. (2009a) considered the role of job and personal resources upon work engagement. Xanthopoulou et al. (2009a) found that job resources of autonomy,

supervisory coaching, and team climate as well as personal resources of self-efficacy, organizational based self-esteem, and optimism all contributed to work engagement. The inclusion of the personal resources and the reciprocal nature of resources and demands was part of the evolution of the model.

Crawford et al. (2010) found evidence to suggest that not all job demands are equal. Demands were originally found to be negatively related to engagement and positively related to burnout. However, by conducting a meta-analysis of 55 manuscripts and 64 samples, Crawford et al. (2010) identified some demands as hindrances and some as challenges. Demands categorized as hindrances, such as emotional dissonance or organizational change, typically impeded employees personal growth, learning, or development (Crawford et al., 2010). Demands categorized as challenges, such as increased responsibility or workload may be viewed as offering opportunities for growth or future gains (Crawford et al., 2010). These findings proved to be theoretical extension of the job demands-resources model.

Global differences in engagement research. Much of the literature on work engagement found to originate in the United States appeared reluctant to incorporate findings from European studies. Macey and Schneider's (2008) article on the meaning of engagement included references to a few European studies and acknowledged the development of the UWES. Rich et al. (2010) also acknowledged the UWES as the most popular measure of engagement and indicate the instrument does tap into meaningfulness and challenge of work; yet indicated that another measure was needed to more precisely

measure Kahn's (1990) conceptualization of engagement to include the investment of one's physical, cognitive, and emotional energies.

Inconsistencies

Notable inconsistencies in the literature were references in various articles to an early article on engagement by Harter, Schmidt, and Hayes (2002). The Harter et al. article, published in the Journal of Applied Psychology, used the Gallup Workplace Audit to assess engagement. Harter et al. contended, "employee engagement refers to the individual's involvement and satisfaction with as well as enthusiasm for work" (p. 269.). As Macey and Schneider (2008) pointed out, this conceptualization of engagement equates the construct with satisfaction. In addition, the Harter et al. (2002) definition appears to overlap with job involvement, which would lend support to Newman and Harrison (2008) argument that engagement is not a unique construct. Schaufeli and Bakker (2010) contend that the Gallup instrument primarily measures antecedents of job satisfaction.

Despite this inconsistency, references to the Harter et al. (2002) article were used to illustrate the positive outcomes of engagement by several researchers. Bakker et al. (2007) included the article for this purpose in their article on job resources and work engagement. Bakker and Demerouti (2007) indicated that it was "crucial for the development of the field of organizational psychology to include in research models objective measures that play a role in business" (p. 322) followed by a reference to the Harter et al. (2002) article. It does not seem appropriate to incorporate research findings based upon a construct or instrument with a significantly different theoretical orientation.

Conclusions and the Current Study

The literature review provided support for the construct of engagement and the job demands-resources theoretical framework (Meyer, 2013). While scholars may not agree on the level at which engagement should be measured (i.e., work, job or employee level), they do seem to agree that engagement can be measured with different instruments (Byrne et al., 2016). Based upon the number of articles on engagement antecedents, scholars also agree that understanding what contributes to engagements is a worthy research effort. The JD-R theory provided a strong framework for understanding how e-leaders' communication and managerial coaching behaviors relate to work engagement in virtual workers. The e-leaders behaviors are viewed as job resources within the theory and hypothesized to support the motivational processes contributing to work engagement.

The literature on specific e-leader behaviors that support positive virtual worker outcomes, such as work engagement, is sparse. Wiesenfeld, Raghuram, and Garud (2001) argued more than a decade ago that managing virtual workers was a key challenge. Yet, much of the literature focused upon virtual team effectiveness. Electronic communications was a topic of research in the sense of identifying those media types that were most effective for communicating complex information, yet limited research around how e-leaders actually communicated with virtual workers was identified. The current study extends the research on both e-leaders and electronic communications by considering how these e-leaders' behaviors are related to work engagement in virtual workers.

The literature on coaching is growing with increased emphasis also on managerial coaching (Ellinger & Kim, 2014) and coaching outcomes. Coaching by managers is referenced in several articles as a core skill or function of managers (Evered & Selman, 1989; Kim, 2014; Ladyshewsky, 2010). Further research is needed to assess outcomes of managerial coaching (Ellinger & Kim, 2014). The current study extends the research on managerial coaching outcomes by considering how these behaviors are related to work engagement in virtual workers.

Critique of Previous Research Methods

Previous research on work engagement is extensive and varied in terms of methodology. Of those studies identified in the literature review, most were quantitative studies using various statistical analysis including structural equation modeling, factorial analysis, regression, and others. These also included repeated measure designs, within person designs, dairy studies, longitudinal studies, and others.

There were several weaknesses noted in the research on engagement. There is a need for greater clarity between work, job, and employee levels of engagement. Definitions of engagement and measurements of engagement in the work place were the subject of several studies (Christian et al., 2011; Wefald et al., 2011). Yet, limited qualitative studies were identified. Qualitative studies may provide the needed differentiation between work, job, or employee levels of engagement and lead to more consensus around how these differing types of engagement are defined.

The inconsistent use of measurement instruments was another area of weakness. The JES measures job or employee engagement with the work role. This distinction is

significant in that the work role encompasses the individuals' identification with not only the work activity but the organization. Individuals working in union environments may be strongly engaged with their work activity yet not engaged in the role. Alternatively, individuals may be drawn to work for an organization because of an affiliation with the organization's mission yet not actively engaged in their work. In a study on transformational leadership and work engagement, the Gallup Workplace Audit was used to measure work engagement (Zhu, Avolio, & Walumbwa, 2009). The Gallup Workplace Audit, also previously discussed, is more a measure of job satisfaction than engagement (Byrne et al., 2106; Schaufeli & Bakker, 2010).

Perhaps the greatest weakness of the research identified in the literature review process was the reliance upon nonexperimental methods and self-report survey data. There are several issues with this type of research. Non-experimental or descriptive research limits the causal impact one variable has upon another (Cozby & Bates, 2015; Leedy & Ormrod, 2016). The majority of the research reviewed on work engagement and managerial coaching relied upon correlational methods using survey research. Self-report survey data, as previously discussed, may present limitations in terms of careless or acquiescence responding (Simmering et al., 2015). In addition, many of the studies reviewed (Babcock-Roberson, 2010; Balthazard et al., 2009; Fan et al., 2014) used undergraduate or graduate convenience samples.

In the virtual work environment, workers may or may not have the opportunity to engage with others to form social networks or have an affiliation with the organization. The virtual worker is likely to have someone to whom they report. The current study

focused upon the work activity and the relationship between e-leader's behaviors (i.e., electronic communication use and managerial coaching) and work engagement of virtual workers.

Additionally, there were also strengths noted in the studies identified as part of the literature review. Most of the studies identified were based upon theory and used prior research to inform their methodology. For example, Taris and Kompier (2014) contend that the time interval between study waves in longitudinal research must account for the outcome being studied as well as the context of the process under consideration. Theory also should inform the time intervals identified between study waves (Ployhart & Ward, 2011; Taris & Kompier, 2014). Bakker and Bal (2010) considered outcomes of motivational potential and week-level work performance in determining lagged effects of job resources. Vogt et al. (2016) specifically chose a three month interval for their study to ensure participant were likely to remain at the organization and unlikely to experience major organizational changes during the study. Bakker and Bal (2010) and Vogt et al. (2016) both clearly indicated the job demand resources theory was used to inform their longitudinal studies. Both studies incorporated research best practices to justify and support their methodological approach.

Summary

Work engagement has important outcomes for the individual and organization and as such as proven to be a topic of much research in the literature. Understanding the relationship between e-leaders' behaviors and work engagement in virtual workers has not been studied in the literature. The current study extends the literature on work

engagement, e-leadership, electronic communications, and managerial coaching by considering these relationships in light of the job demands resources theory.

The methodology and findings of the current research are described in the following chapters of this dissertation. Details of the methodology used in the study are described in Chapter 3. The results of the data analyses completed for the study are presented in Chapter 4. The conclusion of the dissertation, in Chapter 5, will include an interpretation and application of the study's results, significant findings, implications, and recommendations for further study.

CHAPTER 3. METHODOLOGY

This study examined the relationship between e-leaders' electronic communication and coaching behaviors and length of employment with work engagement in virtual worker. This chapter provides a review of the purpose and background of the study, the research questions, a description of the methodology, the target population and sample, data collection and statistical procedures employed in the study, study limitations, and ethical considerations.

Purpose of the Study

Examining the relationships among e-leaders' electronic communication and coaching behaviors and length of employment with work engagement in virtual workers was the purpose of this study. With continued advances in technology, organizations are likely to expand the use of virtual workers to capitalize upon a wider talent pool (Gajendran et al., 2015). Work engagement, as discussed in Chapter 2, relates to the individual's relationship with his or her work and has been related to both individual and organizational outcomes such as job performance (Christian et al., 2011) and profitability (Schneider et al., 2009). Understanding the relationship between e-leaders' choice of electronic communication and coaching behaviors effect upon virtual workers' levels of work engagement may inform organizational selection and training practices. Further, this study adds to the existing literature on e-leaders' use of electronic communications and coaching behaviors and the impact of both upon virtual worker's engagement. While

the study extends the research on e-leadership, managerial coaching, work engagement, and virtual workers, due to the use of a correlational research design only the relationships between these variables were explored.

Research Questions and Hypotheses

The following research questions and hypotheses were addressed in this study.

RQ1. Are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers?

Ho: There will be no significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

H1: There will be significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

RQ2. Are e-leaders' managerial coaching behaviors related to average scores of work engagement in virtual workers?

Ho: There will be no significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

H1: There will be a significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

RQ3. What is the relationship between length of employment and average scores of work engagement among virtual workers?

Ho: There will be no significant difference in the average scores of work engagement in virtual workers for the variable of length of employment.

H1: There will be a significant difference in the average scores of work engagement in virtual workers for the variable of length of employment.

RQ4. When length of employment is held constant, will the interaction of e-leaders' use of electronic communication and managerial coaching behaviors be related to average scores of work engagement in virtual workers?

Ho: There will be no significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict differences on average scores of work engagement when the variable length of employment is held constant in virtual workers.

H1: There will be a significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict differences on average scores of work engagement when the variable length of employment is held constant in virtual workers.

RQ5. When e-leaders' managerial coaching behavior is held constant, will the interaction of e-leaders' use of electronic communication and length of employment be related to average scores of work engagement in virtual workers?

Ho: There will be no significant interaction between the variable of e-leaders' use of electronic communication with the variable length of employment to predict differences on average scores of work engagement when the variable of managerial coaching behavior is held constant in virtual workers.

H1: There will be a significant interaction between the variable of e-leaders' use of electronic communication with the variable length of employment to predict differences on average scores of work engagement when the variable of managerial coaching behavior is held constant in virtual workers.

RQ6. When e-leaders' use of electronic communication is held constant, will the interaction of e-leaders' managerial coaching behavior and length of employment be related to average scores of work engagement in virtual workers?

Ho: There will be no significant interaction between the variable of managerial coaching behavior and the variable length of employment to predict differences on average scores of work engagement when the variable e-leaders' use of electronic communication is held constant in virtual workers.

H1: There will be a significant interaction between the variable of managerial coaching behavior and the variable length of employment to predict differences on average scores of work engagement when the variable e-leaders' use of electronic communication is held constant in virtual workers.

RQ7. Will the interaction of e-leaders' use of electronic communication, managerial coaching behavior, and length of employment be related to average scores of work engagement in virtual workers?

Ho: There will be no significant differences in average scores on work engagement in virtual workers as a result of the interaction between the variables of e-leaders' use of electronic communication, managerial coaching behavior, and length of employment.

H1: There will be a significant differences in average scores on work engagement in virtual workers as a result of the interaction between the variables of e-leaders' use of electronic communication, managerial coaching behavior, and length of employment.

Research Design

The research design utilized in this study was a quantitative correlational research design with survey data from two validated instruments. This non-experimental approach used statistical analysis to determine relationships among the variables. An independent factorial analysis of variance (ANOVA) was used to respond to all seven research questions. The factorial ANOVA is appropriate when two or more group membership variables are used to predict scores on one quantitative outcome variable such as scores on work engagement (Warner, 2013). There were 18 groups made up of the predictor or independent variables in this study. These included two levels for electronic communication (Factor A); three levels for coaching behaviors (Factor B); and three levels for length of employment of the virtual worker (Factor C). The quantitative outcome variable was work engagement as measured by the UWES (Schaufeli, Salanova, et al., 2002).

Target Population and Sample

Population

The target population for this study was virtual workers defined as knowledge or technical full-time employees who routinely worked remotely from a home office five days per week with limited in-person interaction with a supervisor. Full-time employment was defined as working an average of 40 hours per week. Self-employed

individuals were not considered for this study. According to a U.S. Census Bureau's report, the number of workers working exclusively from home increased from 4.8% of the working population to 6.6% in 2010 (Mateyka et al., 2012). It should be noted these census numbers include self-employed and family workers as well as individuals who may not be knowledge or technical workers. However, these workers did all report working at home every day that they worked with no reporting to an onsite location (Mateyka et al., 2012). As noted by Mateyka et al. (2012), "between 2000 and 2010, there was substantial growth of home-based work in computer, engineering, and science occupations" (p. 20) which is in line with the target population. While multiple industries were represented in the U.S. Census data, the majority of those home-based workers privately employed (e.g., excluding self-employed, family workers) were engaged in management, business, and financial occupations (25.4%), professional and related occupations (30.6%) or office and administrative support occupations (12.7%). Using the U.S Census numbers of those privately employed working in these occupations, the target population is an estimated 3.5 million virtual workers. The majority of this population were college educated, predominately white, female, and between the ages of 35 to 54 years old. Complete demographic information related to the target population is available in the Appendix.

Sample

The sampling strategy used in this study was non-probability and the sampling design was purposive. The sample for this study consisted of individuals who worked from a home office five days per week, in a variety of knowledge or technical jobs, and

had limited in-person interaction (less than one in person meeting per week) with a supervisor. To find participants meeting the specified selection criteria, participants were recruited through Qualtrics Panels, a research company, retained by the researcher. In addition to working remotely five days per week, from a home office, with limited in person contact with an immediate supervisor, the selection criteria was limited to individuals between the ages of 20 and 65 years of age. Individual who were self-employed, held jobs that routinely took them out of their home office (e.g., outside sales, realtor, nurse, food delivery), were homemakers, or were retired were excluded from participating.

Power Analysis

A power analysis was conducted to determine the appropriate sample size for the study using G*Power 3.1.9.2 (Faul, Erdfelder, Buchner, & Lang, 2009). This indicated that for an ANOVA with fixed effects, special, main effects and interactions, an effect size of .25, $\alpha = .05$, and power at .80, the sample size needed was 197 participants (Warner, 2013).

Procedures

The procedures used in the study are detailed below. The step-by-step directions provide insight into how the research was conducted in terms of participant selection, participant protection, data collection, data analysis, and the instruments used in the research.

Participant Selection

The study incorporated a purposive sampling design with a very specific selection criteria designed to reflect the population of interest, namely virtual workers working full time (average of 40 hours per week, five days a week) from a home office using some form of technology. Qualtrics Panels hosted the survey which was administered online via their website. The sample inclusion criteria provided by the researcher were used by Qualtrics Panels to target potential participants from their database to complete the survey. Prior to beginning the survey, three screening statements or questions were asked of potential participants to ensure the Qualtrics Panels database information was up to date and accurate. If a potential participant's response did not meet the inclusion criteria, the survey was ended and the participant was thanked for his or her time. The initial screening statement and questions added were:

> Please select the scenario below that most closely represents your employment situation.
> How often do you have face-to-face interactions with your supervisor?
> How many days a week do you work?

Following these initial screening questions, potential participants were provided the Informed Consent form. This form provided information on the researcher, the study, the number of participants, participant selection criteria, etc. The potential participant had the option of selecting "I AGREE" to continue to the study or "I DISAGREE" to exit the survey.

These procedures were carried out using features of the Qualtrics Panels survey platform. The survey platform incorporated a "Forced Response" validation option,

which required a response from the participant before moving to the next question. This option was used for all questions in the survey. The survey was also set up with an option that removed partial responses from individuals who were either screened out due to the screening questions or who exited prior to completing the entire survey. In addition, options were selected to prevent participants from completing multiple responses.

Protection of Participants

While the researcher's contact information was provided to participants as part of the Informed Consent Form, participants were contacted and interacted solely with Qualtrics Panels. Participant names were not provided to the researcher. A unique Response ID number was assigned to each participant and the participant's IP Address was recorded. In addition, the Qualtrics Security Statement addresses all data security efforts put into place by Qualtrics Panels including the utilization of Transport Layer Security (TLS) encryption to ensure the security of all data collected. Security includes firewalls and restricted access. Should the data be accessed by unauthorized individuals or hackers, risk to respondents remains low in that personally identifying information and information of a confidential nature was not included in the data collection process.

Data Collection

Once the participant selected the "I AGREE" option indicating she or he had read the Informed Consent Form, had the opportunity to ask questions about the study, and voluntarily agreed to be in the study, the first question in the study was launched. The survey consisted of 26 questions plus three follow up questions, which may have been

asked depending upon the participant's responses. For example, if the participant indicated she worked in a different time zone than her supervisor, she was asked for the difference in hours between her time zone and her supervisor's time zone. The survey also included demographic questions designed by the researcher related to the participant's time in current work position, time worked with current supervisor, gender, age, race, academic background, industry type, and the number of hours worked per week. On average, the survey took participants approximately 9 minutes to complete.

The data was transmitted to the researcher from Qualtrics Panel via e-mail. The data was downloaded onto a USB drive with password protection and kept in a secure location accessible only to the researcher.

Data Analysis

The survey responses received from Qualtrics were downloaded into an Excel file. The data were then screened for inconsistencies in responses before being subsequently imported into IBM Statistics SPSS 22.

Descriptive Statistics. After the survey data were coded and composite scores calculated for the UWES and the Ellinger Behavioral Scales, descriptive statistics were calculated in SPSS. Descriptive statistics were completed on the sample demographics to describe the sample. Frequency distribution tables were created in SPSS to provide insight into the types of groups represented by the demographical data collected. A frequency distribution table of the Total UWES Score was complete with the mean and standard distribution for the variables Communication Type, Length of Employment, and Coaching Behavior was also created. These statistics and frequency tables are displayed and further discussed in Chapters 4 and 5. The variables were screened for normality

through the use of histograms and skewness and kurtosis statistics, which are displayed and discussed in the applicable sections of Chapter 4.

Hypothesis Testing. The Levene test was performed in SPSS to determine if scores were reasonably homogeneous across groups. To explore the research questions of this study, a factorial ANOVA was completed. These analyses, outlined in Table 1, were used to test the assumptions of and perform the ANOVA of this study and are reported fully in Chapter 4.

Table 1. Data Analysis

Research Question	Type of Analysis	Descriptive Statistics	Hypothesis Testing	Posthoc Analysis
1	ANOVA	No	Yes	No
2	ANOVA	Yes	Yes	Tukey
3	ANOVA	Yes	Yes	Tukey
4	ANOVA	Yes	Yes	Tukey
5	ANOVA	Yes	Yes	Tukey
6	ANOVA	Yes	Yes	Tukey
7	ANOVA	Yes	Yes	Tukey

Post Hoc Analyses. Additional post hoc analyses were also performed. This included a 2X3 factorial ANOVA with the following modified research questions and hypotheses.

RQ1. Are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers?

Ho: There will be no significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

H1: There will be significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

RQ2. Are e-leaders' managerial coaching behaviors related to average scores of work engagement in virtual workers?

Ho: There will be no significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

H1: There will be a significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

RQ3. Will the interaction of e-leaders' use of electronic communication and managerial coaching behaviors be related to average scores of work engagement in virtual workers?

Ho: There will be no significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict differences on average scores of work engagement.

H1: There will be a significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict differences on average scores of work engagement.

With the modified 2X3 factorial ANOVA, there were six groups made up of the predictor or independent variables. These included two levels for electronic communication (Factor A) and three levels for coaching behaviors (Factor B). The

quantitative outcome variable, work engagement as measured by the UWES (Schaufeli, Salanova, et al., 2002), remained unchanged.

Table 2. Modified Data Analysis

Research Question	Type of Analysis	Descriptive Statistics	Hypothesis Testing	Post Hoc Analysis
1	ANOVA	No	Yes	No
2	ANOVA	Yes	Yes	Tukey
3	ANOVA	Yes	Yes	Tukey

In addition, a *t* test was conducted as post hoc analyses. A one-sample *t* test was completed to compare the Total UWES mean scores obtain in this study with group mean scores for other languages in the UWES database.

Instruments

The study incorporated the use of two validated instruments, the Utrecht Work Engagement Scale and the Ellinger Behavioral Scale, both of which have been used in prior research on work engagement and managerial coaching. The study also asked respondents to provide information about how most communication occurs with his or her immediate supervisor, primarily through the use of text-based communication such as e-mail, or primarily through the use of voice/video based communication such as the phone or video. Further, information about length of employment and demographic data was obtained from the participants as part of the survey process. An in-depth discussion related to the psychometric properties of both validated instruments follows.

Utrecht Work Engagement Scale

Work engagement was measured by the nine-item Utrecht Work Engagement Scale (UWES), which has been used extensively to measure this construct (Schaufeli,

Salanova, et al., 2002; Schaufeli, Martinez, et al., 2002; De Bruin & Henn, 2013; Seppälä et al., 2009). This instrument was designed to measure overall work engagement or each of the three factors of work engagement: vigor, dedication, and absorption. Vigor is described as a high degree of energy, mental resilience, willingness, and ability to invest in one's work (Maslach et al., 2001; Schaufeli, Martinez, et al., 2002; Schaufeli, Salanova, et al., 2002). Dedication is described as a sense of involvement and significance with work, pride, enthusiasm, challenge, and inspiration in one's work (Maslach et al., 2001; Schaufeli, Martinez, et al., 2002; Schaufeli, Salanova, et al., 2002). Absorption is described as immersion in work, losing track of time, pleasantly and willingly engrossed in work (Maslach et al., 2001; Schaufeli, Martinez, et al., 2002; Schaufeli, Salanova, et al., 2002). Statements such as "When I get up in the morning, I feel like going to work" or "I get carried away when I'm working" are rated on a scale of 0 = *Never* to 6 = *Always*. The original UWES was developed with 24 items in 1999. However, after preliminary psychometric evaluations, seven items were removed resulting in a 17-item version. Through an iterative process, in which multiple samples were analyses, the shortened version of the UWES was developed as follows:

> First, of each scale the most characteristic item was selected on face value. Next, this item was regressed on the remaining items of the particular scale. The item with the highest β-value in most samples was then added to the initial item. In the next step, the sum or these two items was regressed on the remaining items of the scale, and again the item with the highest β-value in most samples was added to both items that were previously selected. These three items constitute the final shortened version of that scale. (Schaufeli & Bakker, 2004b, p.21)

The 9-item version of the UWES provides a range of scores from 0 to 6. The instrument is available for use without charge for non-commercial educational and

research purposes with the expectation that all data collected using the instrument will be shared with the authors to add to their international database. The rationale for use of the UWES was based upon the psychometric properties of the instrument and the prevalence of its use in research upon work engagement.

Validity. Validity refers to the ability of an instrument to measure what it is supposed to measure. Multiple studies have demonstrated criterion-related validity of the UWES in showing work engagement is negatively associated with burnout (Schaufeli & Salanova, 2011) and "discriminated from workaholism" (Schaufeli & Bakker, 2004b, p. 11). The UWES has reported "Cronbach's α of all 9 items varies from .85 to .94 (median: .91) across 9 national samples" (Schaufeli & Bakker, 2004b, p. 33).

Reliability. According to the UWEW test manual, test-retest reliability was established in at least two longitudinal studies. Stability coefficients were reported to range from .64 to .73 for the 9-item version of the instrument (Schaufeli & Bakker, 2004b). Factor analysis demonstrated that both a one-factor and three-factor solution for the UWES 9-item were acceptable (Schaufeli & Bakker, 2004b). The current study used the composite score of UWES, which results in a range of scores from 0-6 (Schaufeli & Bakker, 2004b). The complete data analysis is reported in Chapters 4 and 5.

Ellinger Behavioral Scale

Managerial coaching was measured using the Ellinger Behavioral Scale (Ellinger, 2003). The instrument measures managerial behaviors such as providing feedback, soliciting feedback, using examples to help the individual learn, etc. The original scale incorporated eight items and a 7-point Likert scale using frequency type response with 1=

almost never to 7= *almost always*. Permission to use the Ellinger Behavioral Scale was obtained via e-mail from the creator, Dr. Andrea Ellinger. The rationale for the use of this instrument was based largely upon the instruments assessment of observed behaviors by the employee rather than the relationship with the manager.

Validity. The Ellinger Behavioral Scale was developed though an inductive approach and based upon results of a qualitative study conducted by Ellinger using the Critical Incident Technique (Ellinger, 1997). The construct of coaching is conceptualized as facilitation of learning intended to develop growth and development through supportive management behaviors (Ellinger et al., 2003).

Hagen and Peterson (2015) modified and revalidated the Ellinger Behavioral Scale. Item number eight, "To help me see different perspectives, my supervisor role-plays with me" was removed due to heavy cross-loading in prior studies (Hagen &Peterson, 2015). Also, Hagan and Peterson (2015) modified the response scale to a 6-point Likert scale with agreement type responses of 1= *strongly disagree* and 6 = *strongly agree* and included an option of *Not Applicable*. Spector (1992) indicated that agreement type response are both "versatile and are the most popular" (p. 21). Further, Spector (1992) contended that for many scales, either frequency or agreement type responses will work. The use of the instrument with this modification results in a range of scores from 0-6.

Reliability. With the elimination of item eight and the change in the responses, Hagan and Peterson (2015) conducted a study with a sample of 173 and found that the Ellinger Behavioral Scale had a GFI of .919 and a CFI of .945. RMR and AGFI were

both outside the appropriate range at 0.062 and .855 respectively and RMSEA was .114. While RMR, AGFI, and RMSEA were not ideal, the instrument did have "stronger reliability and reduced cross-loading, and stronger GFI and CFI scores, when compared to the Park Skills-based scale" (Hagen & Peterson, 2015, p. 128).

Summary of Variables

The variables in this study were collected using the instruments or questions summarized in Table 3.

Table 3. Variables Overview

Variable Type	Descriptions	Instrument or Measurements
Independent	Style of Communication	Single Question
Independent	Coaching Behavior	Ellinger Behavioral Scale
Independent	Length of Employment	Single Question
Dependent	Work Engagement	Utrecht Work Engagement Scale (UWES)

Ethical Considerations

This study posed low-risk to participants. Personally held beliefs, opinions, or assumptions about the work environment were not questioned. Personally, identifiable information was not available or used in the study. Capella University's Institutional Review Board review and approval of the study was obtained prior to data collection. Care was taken to ensure that data collection was completed under the available supervision of the dissertation chair. It was anticipated that the transmission of the data from Qualtrics would occur via a secure download. However, the Qualtrics project manager instead sent the file via e-mail. Upon receipt, the file was downloaded to a secure USB drive.

Summary

The purpose and background of the study, the research questions, a description of the methodology, including the population and sample, and procedures employed in the study were reviewed as part of this chapter. Conducting research in an organizational setting is challenging. The research design was selected to determine if there were statistical differences between groups of virtual workers' work engagement based upon differences in e-leaders' communication and coaching behaviors and length of employment. The study incorporated a quantitative correlational research design with survey data from two validated instruments, the Utrecht Work Engagement Scale and the Ellinger Behavioral Scale. The results of the data analyses are presented in the next chapter, Chapter 4.

CHAPTER 4. RESULTS

The purpose of this study was to investigate the relationship between e-leaders' communication and coaching behaviors and length of employment with virtual workers' work engagement. This chapter has four sections. The first section provides a detailed description of the obtained sample used in the study. The second section is a presentation of the hypothesis testing performed for each of the seven research questions. The third section is a summary of the hypothesis testing. The fourth section of the chapter is overview and explanation of additional post-hoc analysis performed and the statistical outcome of those analyses. The chapter is concluded with a summary.

Description of the Sample

The initial data from Qualtrics included 221 responses; the final sample size for the study was 203 participants. In reviewing the initial data set, 12 participants were removed who did not meet the study's selection criteria based upon the "Other" industry responses provided. These included responses such as homemaker, realtor, retirement, chef, labor, nursing, food delivery, unemployed, or unintelligible. Five additional participants were removed due to non-response on the final question related to the number of hours worked per week. One additional participant was removed due to an improbable response on the question related to the difference in hours between the participant's time zone and his or her supervisor's time zone.

Demographics of the Sample

The sample was reflective of the target population of virtual workers defined as knowledge or technical full-time employees who routinely work remotely from a home office with limited in-person interaction with a supervisor. More women (*n* = 122, 60.1%) than men (*n* = 81, 39.9%) completed the survey. Participants were predominantly white (*n* = 160, 78.8%). Additional demographic information relative to the sample is

Table 4. Sample Demographics

Age Ranges	Number	%
20 - 24	26	12.81
25-34	82	40.39
35-44	48	23.65
45-54	42	20.69
55-65	5	2.46
Total	203	100
Education	Number	%
High school or lower	64	31.53
Certificate or Associate Degree	57	28.08
Bachelors	52	25.62
Master	21	10.34
PhD or Terminal Degree	2	0.99
Other/Some College	7	3.45
Total	203	100
Industry Type	Number	%
Innovation, Science, & Technology	41	20.20
Retail	32	15.76
Service	63	31.03
Tourism	3	1.48
Transportation	14	6.90
Higher Education	5	2.46
Other	45	22.17
Total	203	100

provided in Table 4. While 31.5% of respondents completed high school/GED or less (n = 64), 25.6% (n = 52) held a bachelor's degree and 10.3% (n = 21) held a master's degree. The sample consisted virtual workers aged 20-65 with the majority of workers (n = 82, 40.39%) in the 25-34 range. The sample participants worked in a variety of industries. Those participants that noted "Other" on the survey indicated they worked in industries such as finance, marketing, journalism or photography, oil and gas, telecommunications, insurance, pharmacy, and consulting. Several of these other industries may overlap with the "Service" industry type in which the majority of participants worked (n = 63, 31.03%). Overall, the sample is very similar to the U.S. Census data (Appendix) discussed in Chapter 3 on privately employed home-based workers who were predominately white, college educated, female, and between the ages of 35-54.

Hypothesis Testing

This study incorporated a quasi-experimental design with a statistical analysis to respond to the research questions and the use of two validated survey instruments.

Reliability of Instruments

Cronbach's α was completed on the UWES and Ellinger Behavioral Scale using SPSS. The results of these procedures are illustrated in Table 5. Both α's were consistent with the literature on the UWES (Schaufeli & Bakker, 2004b) and the Ellinger

Table 5. Cronbach's Coefficient of Reliability

Instrument	Study Outcome	Lowest Cronbach's Alpha if Item Deleted	Literature Reference a, b
UWES	.908	.889	.91*a
Ellinger Behavioral Scale	.944	.930	.92b

*Median across multiple samples; a Schaufeli & Bakker (2004b); b Hagen & Peterson, 2015

Behavioral Scale (Hagen & Peterson, 2015). Both α's were over .80 indicating good internal consistency. Further, the value of Cronbach's α remained high even if an individual item was removed from the UWES or Ellinger Behavioral Scale. According to Field (2009), a reliable scale should not be overly affected by the removal of one item.

Assumptions

The assumptions of the statistical analysis, a 2X3X3 factorial analysis of variance, were tested using SPSS. An alpha level of .05 for all statistical testing was used. Two of the assumptions of the analysis of variance, independence of observations and that the outcome variable must be quantitative (Warner, 2013) were assured through the methodology used to complete the study. The next test of assumptions for the analysis of variance is that outcome variable was approximately normally distributed (Warner, 2013). Normal distribution of the outcome variable, Total UWES score, was confirmed through calculation of descriptive statistics and visual inspection of a histogram. Descriptive statistics of the Total UWES score are displayed in Table 6. The descriptive statistics indicated skew was -0.503 and kurtosis was -0.442. The histogram in Figure 1 illustrates the negative tendency of the distribution of Total UWES scores. George and Mallery (2014) indicated that both skew and kurtosis with a value ±1.0 is acceptable for most psychometric purposes. The next assumption was the test for homogeneity of variance. A Levene's test verified the equality of variance in the samples, F (17, 185) = 1.280, p =.209.

Table 6. Total UWES Descriptive Statistics

	N	*M*	*SD*	Skewness	Std. Error	Kurtosis	Std. Error
Total UWES	203	4.375	1.103	-0.503	0.171	-0.442	0.340

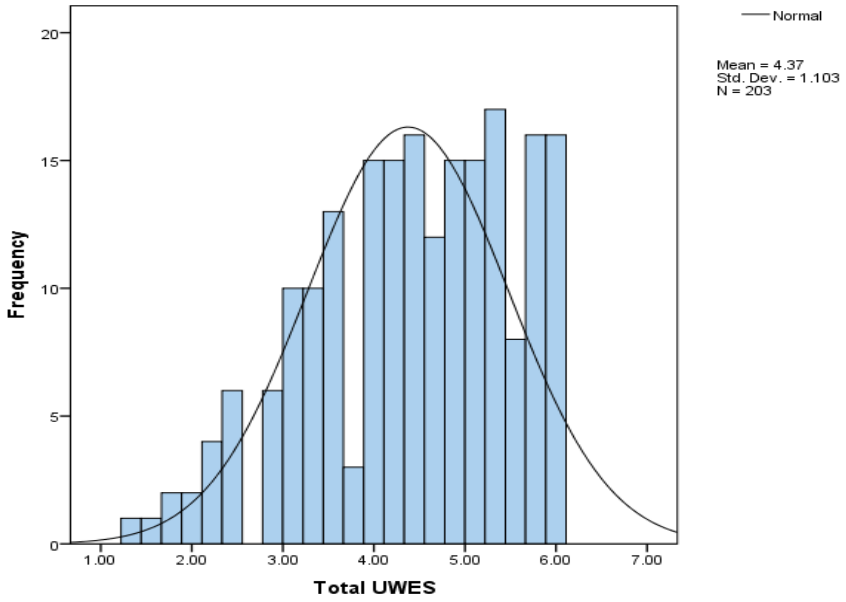

Figure 1. Histogram of outcome variable-total UWES

Independent Variables

Descriptive statistics and a histogram were generated for e-leader's Coaching Behaviors and are displayed in Table 7 and Figure 2. The histogram is negatively skewed with a more peaked distribution than normal reflected in the kurtosis of 2.822. While this is less than ideal (George & Mallery, 2014), as an independent variable, the assumptions of the analysis of variance were not violated. The Coaching Behaviors total scores were recoded into a new variable within SPSS named E-Leader's Coaching Level with three levels where 1= *poor*, 2 = *moderate*, and 3 = *consistent coaching behaviors*.

Table 7. Total Coaching Behaviors Descriptive Statistics

	N	*M*	*SD*	Skewness	Std. Error	Kurtosis	Std. Error
Coaching Behavior	203	4.39	1.476	-1.756	0.171	2.822	0.34

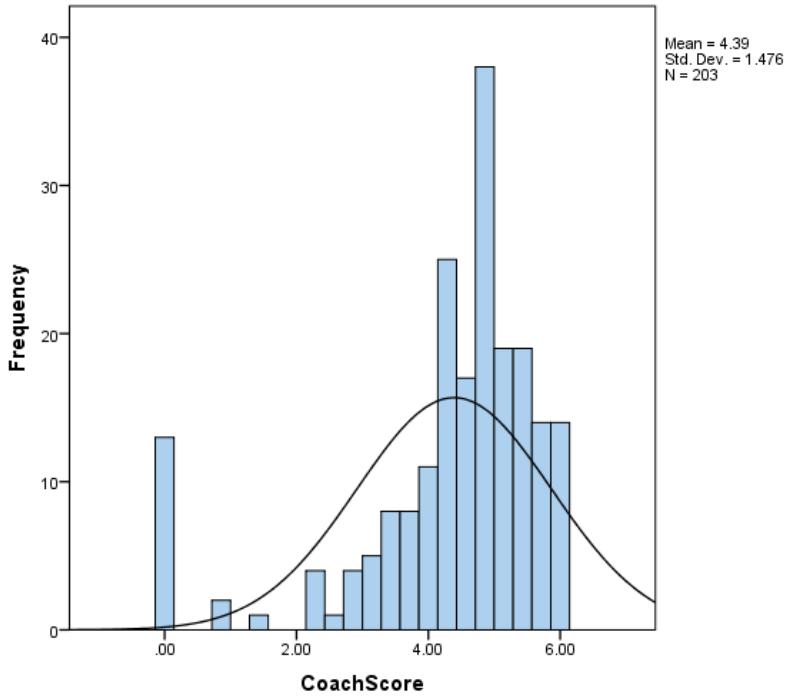

Figure 2. Histogram of coaching behavior total score

A frequency table of survey responses and descriptive statistics of Total UWES mean scores by the three independent variables are displayed in Table 8. This reflects a difference in the sample between those virtual workers with e-leaders using primarily text based electronic communication (*n*=164) compared to those with e-leaders using primarily voice/video-based communication (n=39). This also reflects a differences in the sample by virtual workers' length of employment and e-leaders coaching behaviors.

Table 8 also revealed a serious issue with the study design. While the assumption related to homogeneity of variance was not violated, the cases within the cells of the analysis of variance demonstrated a high degree of variability in size. Individual case sizes were as large as 35 (virtual workers in position 2-5 years with e-leaders using primarily text-based communication and consistent coaching behaviors) while other cells

Table 8. Frequency & Descriptive Statistics of Total UWES Scores

Communication Type	Length of Employment	Coaching Behavior	*M*	*SD*	*N*
Text-Based	Less than 2 years	Poor	4.11	0.96	8
		Moderate	4.40	1.10	19
		Consistent	4.70	1.04	15
		Total	4.45	1.05	42
	2 to 5 years	Poor	3.54	1.30	11
		Moderate	4.16	0.96	17
		Consistent	4.72	0.89	35
		Total	4.36	1.07	63
	More than 5 years	Poor	3.93	1.35	20
		Moderate	4.05	1.15	19
		Consistent	4.62	1.21	20
		Total	4.20	1.26	59
	Total	Poor	3.86	1.26	39
		Moderate	4.20	1.07	55
		Consistent	4.69	1.01	70
		Total	4.33	1.14	164
Voice/Video Based	Less than 2 years	Poor	4.41	1.06	3
		Moderate	4.28	1.15	4
		Consistent	3.78		1
		Total	4.26	0.96	8
	2 to 5 years	Poor	4.22	0.95	3
		Moderate	4.13	0.98	7
		Consistent	4.70	0.56	7
		Total	4.38	0.82	17
	More than 5 years	Poor	4.44		1
		Moderate	5.50	0.24	2
		Consistent	4.94	1.09	11
		Total	4.98	0.99	14
	Total	Poor	4.33	0.83	7
		Moderate	4.38	1.03	13
		Consistent	4.79	0.91	19
		Total	4.57	0.94	39

Table 8. Continued
Frequency & Descriptive Statistics of Total UWES Scores

Total	Less than 2 years	Poor	4.19	0.94	11
		Moderate	4.38	1.08	23
		Consistent	4.64	1.03	16
		Total	4.42	1.03	50
	2 to 5 years	Poor	3.68	1.24	14
		Moderate	4.15	0.95	24
		Consistent	4.72	0.84	42
		Total	4.37	1.02	80
	More than 5 years	Poor	3.96	1.32	21
		Moderate	4.19	1.18	21
		Consistent	4.73	1.16	31
		Total	4.35	1.24	73
	Total	Poor	3.93	1.20	46
		Moderate	4.24	1.06	68
		Consistent	4.71	0.99	89
		Total	4.37	1.10	203

had four or fewer cases (virtual workers with e-leaders using voice/video communications). As discussed in Field (2009), Keppel and Wickens (2004), and Warner (2013) unequal cell sizes of this scale may compromise the inferences made from the factorial analysis of variance. At this point in the analysis, approval was obtained from the school to remove the length of employment variable from the study in an attempt to mitigate the vast differences in cell sizes. Due to administrative requirements of the dissertation review process, the original research questions and a statement related to each hypothesis were necessary for transparency purposes while recognizing the inferences may be compromised due the disparate cell sizes.

Summary of Hypothesis Testing

UWES scores were subjected to an analysis of variance with two levels of e-leader's use of electronic communication (text based, voice/video based), three levels of

e-leader's coaching behaviors (poor, moderate, and consistent), and three levels of length of employment (less than 2 years, 2 to 5 years, and more than 5 years). This analysis was completed using using SPSS and is displayed in Table 9, to answer the original research questions and hypotheses posed in this study.

Table 9. Tests of Between-Subjects Effects – 2X3X3 ANOVA

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*
Corrected Model	29.654[a]	17	1.744	1.492	.101
Intercept	1414.962	1	1414.962	1210.119	.000
Communication Type	1.076	1	1.076	.920	.339
Length of Employment	1.683	2	.842	.720	.488
E-Leaders Coaching Level	2.396	2	1.198	1.025	.361
Communication Type * Length of Employment	2.579	2	1.289	1.103	.334
Communication Type*E-Leaders Coaching Level	1.934	2	.967	.827	.439
Length of Employment * E-Leaders Coaching Level	2.318	4	.580	.496	.739
Communication Type* Length of Employment * E-Leaders Coaching Level	1.861	4	.465	.398	.810
Error	216.316	185	1.169		
Total	4131.395	203			
Corrected Total	245.970	202			

a. R Squared = .121 (Adjusted R Squared = .040)

b. Computed using alpha = .05

The following research questions and hypotheses were addressed in this study.

RQ1. Are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers?

Ho: There will be no significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

H1: There will be significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

There was no significant main effect for e-leaders use of electronic communication related to average scores of work engagement in virtual workers. Virtual workers with e-leader's using text based communication (M = 4.25) did not have a score significantly different on the UWES than virtual workers with e-leader's using voice/video based communication (M = 4.48), F (1, 185) = .920, p = .339. Therefore, Research Question One was not supported and the null hypothesis was not rejected.

RQ2. Are e-leaders' managerial coaching behaviors related to average scores of work engagement in virtual workers?

Ho: There will be no significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

H1: There will be a significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

There was no significant main effect for e-leaders coaching behaviors. Virtual workers with e-leaders with poor coaching behaviors (M = 4.109) and those with moderate coaching behaviors (M = 4.42) did not have a score significantly different on the UWES than virtual workers with e-leaders with consistent coaching behaviors (M = 4.58), F (2, 185) = 1.025, p = .361. Therefore, Research Question Two was not supported and the null hypothesis was not rejected.

RQ3. What is the relationship between length of employment and average scores of work engagement among virtual workers?

Ho: There will be no significant difference in the average scores of work engagement in virtual workers for the variable of length of employment.

H1: There will be a significant difference in the average scores of work engagement in virtual workers for the variable of length of employment.

There was no significant main effect for virtual workers length of employment. Virtual workers with less than 2 years of employment (M = 4.28) and those with 2 to 5 years of employment (M = 4.24) did not have a score significantly different on the UWES than virtual workers with length of employment in excess of 5 years (M = 4.58), F (2, 185) = .720, p = .488. Therefore, Research Question Three was not supported and the null hypothesis was not rejected.

RQ4. When length of employment is held constant, will the interaction of e-leaders' use of electronic communication and managerial coaching behaviors be related to average scores of work engagement in virtual workers?

Ho: There will be no significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict differences on average scores of work engagement when the variable length of employment is held constant in virtual workers.

H1: There will be a significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict

differences on average scores of work engagement when the variable length of employment is held constant in virtual workers.

The interaction effect between e-leader's use of electronic communication with the variable manager coaching behavior, when the variable length of employment was held constant, was not significant, F (2, 185) = .827, p = .439. Therefore, Research Question Four was not supported and the null hypothesis was not rejected.

RQ5. When e-leaders' managerial coaching behavior is held constant, will the interaction of e-leaders' use of electronic communication and length of employment be related to average scores of work engagement in virtual workers?

Ho: There will be no significant interaction between the variable of e-leaders' use of electronic communication with the variable length of employment to predict differences on average scores of work engagement when the variable of managerial coaching behavior is held constant in virtual workers.

H1: There will be a significant interaction between the variable of e-leaders' use of electronic communication with the variable length of employment to predict differences on average scores of work engagement when the variable of managerial coaching behavior is held constant in virtual workers.

The interaction effect between e-leaders' use of electronic communication and the variable length of employment was not significant, F (2,185) = 1.103, p = .334. Therefore, Research Question Five was not supported and the null hypothesis was not rejected.

RQ6. When e-leaders' use of electronic communication is held constant, will the interaction of e-leaders' managerial coaching behavior and length of employment be related to average scores of work engagement in virtual workers?

Ho: There will be no significant interaction between the variable of managerial coaching behavior and the variable length of employment to predict differences on average scores of work engagement when the variable e-leaders' use of electronic communication is held constant in virtual workers.

H1: There will be a significant interaction between the variable of managerial coaching behavior and the variable length of employment to predict differences on average scores of work engagement when the variable e-leaders' use of electronic communication is held constant in virtual workers.

The interaction effect between e-leader's managerial coaching behaviors and the variable length of employment was not significant, F (4,185) = .496, p = .739. Therefore, Research Question Six was not supported and the null hypothesis was not rejected.

RQ7. Will the interaction of e-leaders' use of electronic communication, managerial coaching behavior, and length of employment be related to average scores of work engagement in virtual workers?

Ho: There will be no significant differences in average scores on work engagement in virtual workers as a result of the interaction between the variables of e-leaders' use of electronic communication, managerial coaching behavior, and length of employment.

H1: There will be a significant differences in average scores on work engagement in virtual workers as a result of the interaction between the variables of e-leaders' use of electronic communication, managerial coaching behavior, and length of employment.

The interaction effect between e-leaders' use of electronic communication, managerial coaching behaviors, and the virtual workers' length of employment was not significant, F (4,185) = .398, p = .810. Therefore, Research Question Seven was not supported and the null hypothesis was not rejected.

Post Hoc Analyses

After careful consideration and consultation with the dissertation chair, the length of employment variable was removed. Approval for this amendment to the study design was obtained from the school. This revision reduced the required groups from 18 to 6 and resulted in a 2X3 factorial analysis of variance to answer the following modified research questions and hypotheses.

RQ1. Are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers?

Ho: There will be no significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

H1: There will be significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

RQ2. Are e-leaders' managerial coaching behaviors related to average scores of work engagement in virtual workers?

Ho: There will be no significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

H1: There will be a significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

RQ3. Will the interaction of e-leaders' use of electronic communication and managerial coaching behaviors be related to average scores of work engagement in virtual workers?

Ho: There will be no significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict differences on average scores of work engagement.

H1: There will be a significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict differences on average scores of work engagement.

Even with the revision to the study and 203 participants, with a 2X3 analysis of variance there were six cells which participants may have been assigned to based upon individual responses. As a result, the cell ns were still unequal but more balanced resulting in a nonorthogonal factorial analysis of variance. Type III sums of squares were used to control for confounding factors (Warner, 2013). A revised frequency table of survey responses and descriptive statistics of UWES mean scores by the two independent

variables E-Leader's Coaching Level and Style of Electronic Communication are illustrated in Table 10.

Table 10. Revised Frequency & Descriptive Statistics of Total UWES Scores

Coaching Behavior	Text Based			Voice/Video Based			Total		
	M	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*
Poor	3.86	1.26	39	4.33	0.83	7	3.93	1.20	46
Moderate	4.20	1.07	55	4.38	1.03	13	4.24	1.06	68
Consistent	4.69	1.01	70	4.79	0.91	19	4.71	0.99	89
Total	**4.33**	**1.14**	**164**	**4.57**	**0.94**	**39**	**4.37**	**1.10**	**203**

Revised Summary of Hypothesis Testing. UWES scores were subjected to an analysis of variance with two levels of e-leader's use of electronic communication (text based, voice/video based) and three levels of e-leader's coaching behaviors (poor, moderate, and consistent). This analysis was completed using SPSS, displayed in Table 11, to answer the following research questions and hypotheses posed in this study.

Table 11. Tests of Between Subjects Effects – 2X3 ANOVA

Source	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*
Corrected Model	22.155[a]	5	4.431	3.900	.002
Intercept	2085.784	1	2085.784	1835.887	.000
Communication Type	1.741	1	1.741	1.532	.217
E-Leaders Coaching Level	8.934	2	4.467	3.932	.021
Communication Type * E-Leaders Coaching Level	.598	2	.299	.263	.769
Error	223.815	197	1.136		
Total	4131.395	203			
Corrected Total	245.970	202			

a. R Squared = .090 (Adjusted R Squared = .067)

b. Computed using alpha = .05

RQ1. Are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers?

Ho: There will be no significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

H1: There will be significant differences in the average scores of work engagement in virtual workers for the variable e-leaders' use of electronic communication.

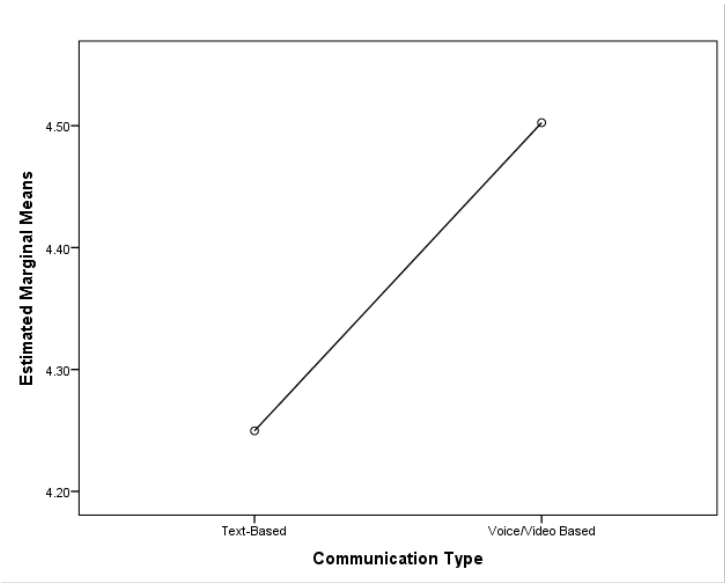

Figure 3. Est. marginal means of total UWES by communication type

There was no significant main effect for e-leader's use of electronic communication. Figure 3 is a graph illustrating the estimated marginal means of Total UWES by e- leader's electronic communications type. Virtual workers with e-leader's using text based communications (M = 4.25) did not have score significantly higher on the UWES than virtual workers with e-leader's using voice/video based communications

(M = 4.50), F (1, 197) = 1.532, p = .217. Therefore, Research Question One was not supported and the null hypothesis was not rejected.

RQ2. Are e-leaders' managerial coaching behaviors related to average scores of work engagement in virtual workers?

Ho: There will be no significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

H1: There will be a significant difference in the average scores of work engagement in virtual workers for the variable of manager coaching behaviors.

There was a significant main effect for e-leader's coaching behaviors. Results showed that virtual workers having e-leaders who demonstrated more consistent coaching behaviors (M = 4.74) scored higher in work engagement than those virtual workers having e-leaders who demonstrated moderate (M=4.29) or poor (M=4.09) coaching behaviors, F (2,197) = 3.932, p = .021. Given the degrees of freedom (2, 197) and an alpha level set to .05, a critical value of 2.99 was necessary to reject the null hypothesis. The corresponding effect-size estimate (η^2 = .036) indicated a medium effect (Warner, 2013). The graph in Figure 4 illustrates the estimated marginal means of Total UWES by e-leader coaching levels and indicated consistent coaching behaviors by the e-leader had higher mean scores on the UWES than the other two levels. The observed statistical power for this factor was .703 indicating a 70% chance of rejecting the null hypothesis when the null hypothesis is actually false. Therefore, Research Question Two was supported and the null hypothesis was rejected. The planned Tukey HSD post hoc

Table 12. Multiple Comparisons

Dependent Variable: Total UWES						95% Confidence Interval	
Coaching Behaviors			Mean Diff.	SE	Sig.	Lower Bound	Upper Bound
Tukey HSD	Poor	Moderate	-.3086	.20348	.285	-.7892	.1719
		Consistent	-.7792*	.19356	.000	-1.2363	-.3221
	Moderate	Poor	.3086	.20348	.285	-.1719	.7892
		Consistent	-.4706*	.17168	.018	-.8760	-.0651
	Consistent	Poor	.7792*	.19356	.000	.3221	1.2363
		Moderate	.4706*	.17168	.018	.0651	.8760

Based on observed means.
The error term is Mean Square(Error) = 1.136.
*The mean difference is significant at the .05 level.

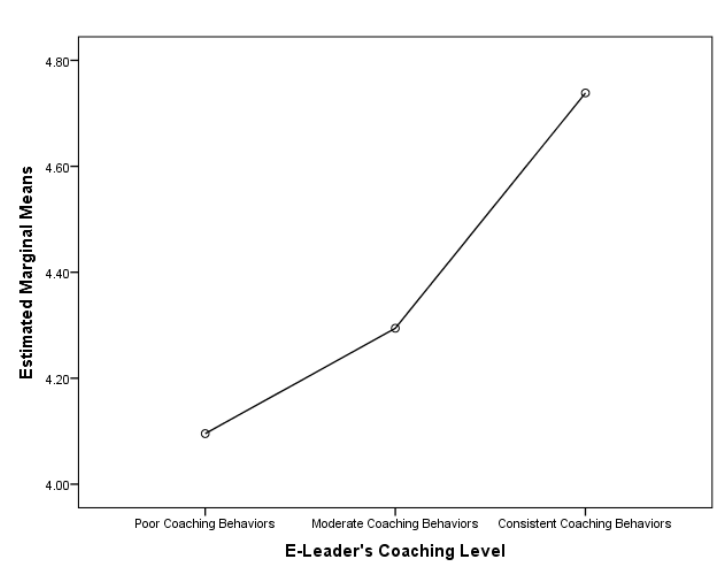

Figure 4. Est. marginal means of total UWES by coaching level

procedure revealed that e-leaders use of moderate and consistent coaching behaviors resulted in Total UWES mean scores, which were significantly higher than poor coaching behaviors. The results of the Tukey HSD is displayed in Table 12.

RQ3. Will the interaction of e-leaders' use of electronic communication and managerial coaching behaviors be related to average scores of work engagement in virtual workers?

Ho: There will be no significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict differences on average scores of work engagement.

H1: There will be a significant interaction between the variables of e-leaders' use of electronic communication with the variable manager coaching behaviors to predict differences on average scores of work engagement.

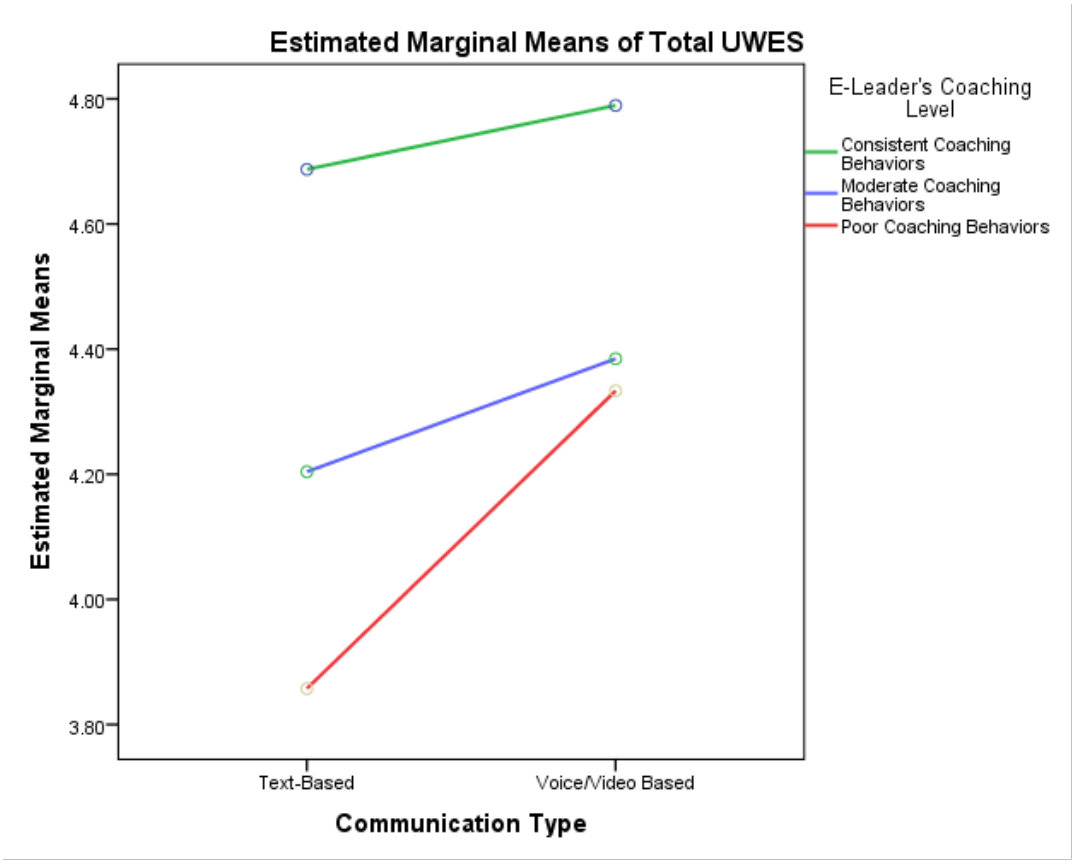

Figure 5. Interaction effect of e-leaders com type & coaching level

The interaction effect between e-leader's use of electronic communication and manager coaching behaviors was not significant, F (2,197) = .263, p = .769. Therefore, Research Question Three was not supported and the null hypothesis was not rejected.

Additional Post-Hoc Analyses

The variance between e-leaders relying upon text-based communication (81%) and those using voice/video-based communication (19%) was not expected. In the process of researching this variance, the UWES manual was further reviewed. Schaufeli and Bakker (2004b) indicated a *t* test could be conducted to observe differences between scores for specific employee groups and scores from the UWES database. While much of the data provided in the UWES manual was related to Dutch norms, group norms for other countries and languages were also provided. This included mean scores, standard errors, and standards deviations for the total scores of the UWES 9. As a result, a *t* test was conducted as a post hoc analysis to compare the Total UWES mean scores obtain in this study with group mean scores for other languages in the UWES database.

The one-sample *t* test was used to make inference about the known value (Warner, 2013), in this case the UWES database mean (M = 4.05, SD = 1.19; Schaufeli & Bakker, 2004b). Using SPSS, the Total UWES scores were subjected to a one-sample *t*-test to compare the study's overall mean (M = 4.37, SD = 1.10) with the UWES database mean entered as the test value. Assumptions for the *t* test are that the quantitative variable is normally distributed. The Total UWES scores were previously reviewed; descriptive statistics are available in Table 6 and a histogram is available in Figure 1 for

this variable. The mean Total UWES scores did differ significantly, $t(202), = 4.192, p < .001$, two tailed and a medium effect size with Cohen's $d = .69$.

If the database UWES mean of 4.05 is representative of the population mean and the $SE_M = .07745$, it would be expected that 95% of sample means fall between 3.725 and 4.374 for a sample size of $N = 203$. The overall study mean of 4.37 fell at the very top of this range.

Summary

This study was focused on the relationship between the effect of e-leaders' choice of electronic communication media and coaching behaviors upon work engagement in virtual workers. A thorough description of the study's sample along with descriptions of the variables was provided in this chapter. Details of the analysis were also discussed. The study was proposed and initially conducted with seven research questions. However due to issues with cell sizes of the ANOVA, a modification to the research design was approved by the school resulting in the following three research questions.

RQ1. Are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers?

RQ2. Are e-leaders' managerial coaching behaviors related to average scores of work engagement in virtual workers?

RQ3. Will the interaction of e-leaders' use of electronic communication and managerial coaching behaviors be related to average scores of work engagement in virtual workers?

A summary of the findings of the revised research questions and post hoc analysis are provided in Table 13. While only e-leader's managerial coaching behaviors were found to be statistically related to scores on virtual workers total UWES scores, the study provided insight into the use of e-leaders electronic communications. This insight will be expanded upon in Chapter 5 along with implications and recommendations for further research.

Table 13. Summary of Findings for Revised Research Questions & Post Hoc Analysis

Research Questions and Post Hoc Analysis		Findings	Supported or Not Supported
RQ1.	Are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers?	Virtual workers with e-leader's using text based communications (M = 4.25) did not have score significantly higher on the UWES than virtual workers with e-leader's using voice/video based communications (M = 4.50), F (1, 197) = 1.532, p = .217.	Not Supported
RQ2.	Are e-leaders' managerial coaching behaviors related to average scores of work engagement in virtual workers?	Virtual workers with e-leaders who demonstrated more consistent coaching behaviors (M = 4.74) scored higher in work engagement than those virtual workers having e-leaders who demonstrated *moderate* (M=4.29) or *poor* (M=4.09) *coaching behaviors*, F (2,197) = 3.932, p = .021.	Supported
RQ3.	Will the interaction of e-leaders' use of electronic communication and managerial coaching behaviors be related to average scores of work engagement in virtual workers?	The interaction effect between e-leader's use of electronic communication and manager coaching behaviors was not significant, F (2,197) = .263, p = .769.	Not Supported
Post Hoc Analysis	Do virtual worker Total UWES scores differ significantly from overall scores from the UWES database?	Virtual worker Total UWES scores did differ significantly from database UWES scores, t(202), = 4.192, p < .001, two tailed and a medium effect size with Cohen's d = .69.	Supported

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

This final chapter assesses the results of the study in light of the previous research and expected findings. The chapter begins with a summary of the results. This is followed by a discussion of the results, which considers the results in light of the original research questions and highlights issues that may have attributed to the study's outcome. Insight into the results, in light of the wider audience and prior research, are reviewed in the conclusion of results section of the chapter. Discussion on the study's limitations and implications for practice are also included. The final section of the dissertation is focused upon recommendations for further research.

Summary of the Results

Prior to this study, limited research had been conducted on e-leader behaviors that affected virtual workers' levels of work engagement. This study focused specifically upon understanding the relationship between leaders' electronic communication and coaching behaviors with virtual workers' levels of engagement. The study was significant for research and practical purposes. From a research perspective, the study added to the literature on work engagement in consideration of a previously understudied population, virtual workers. It also expanded the literature on e-leadership, managerial coaching, and electronic communication. From a practical standpoint, the study was significant in revealing the propensity of e-leaders to rely upon text-based messages to

communicate with virtual workers. These findings will be expanded upon in the next section.

Work engagement was both the primary theoretical framework for the study and the outcome variable. The job demands-resources theory was a secondary theoretical framework for the study. Using the definition from Schaufeli, Salanova, et al. (2002) and measuring the construct of work engagement with the UWES, this study focused upon the individual's relationship with his or her work while considering the influence of the e-leader. Research has shown that leadership can cultivate job demands or job resources in a traditional work environment (Xanthopoulou et al., 2009b).

Bentley et al. (2016) noted that advances in information and communication technologies (ICT's) have changed the nature and flexibility of work arrangements for both organizations and workers. While telework can take place in various remote contexts (Bentley et al., 2016), this study focused upon virtual workers working from a home office via computer five days per week with limited in person with a supervisor.

Within the remote work environment, the type of electronic communication media used matters. Kelley and Kelloway (2012) found that the context of communication differs for leaders of remote workers than for those leaders who have face-to-face interactions with workers. Colbert, Yee, and George (2016) suggested text-based messages may be viewed as more efficient and provide for the opportunity "to edit and self-present in a way that face-to-face or telephone conversations do not" (p. 733).

While this was initially conducted as a 2X3X3 factorial analysis of variance, limited cases per cell necessitated a revision to a 2X3 analysis of variance using the

electronic communication (with 2 levels) and the managerial coaching behaviors (with 3 levels) variables only. The revision to the study resulted in three research questions. There were no main effects, F (1,197) = 1.532, p = .217, for the first research question, are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers? There was also not an interaction effect, F (2, 197) = .263, p = .769, between e-leaders use of electronic communication and manager coaching behaviors, the third research question. Therefore, RQ1 and RQ3 were not supported and the null hypotheses for both were not rejected. There was a significant main effect, F (2, 197) = 3.932, p = .021, for the second research question, are e-leader's managerial coaching behaviors related to average scores of work engagement in virtual workers? Therefore, RQ2 was supported in that e-leaders managerial coaching behaviors do significantly affect virtual workers' level of work engagement.

Based upon the unexpected variance in e-leaders' use of electronic communication further post hoc analyses were completed. The Total UWES mean scores obtain in the study were compared with group mean scores for other languages in the UWES database using a one sample *t*-test. The mean Total UWES scores for virtual workers did differ significantly from the UWES database scores.

Discussion of the Results

Research in traditional work environments has shown that leadership affects work engagement (Babcock-Roberson & Strickland, 2010; Schaufeli, 2015); yet, there was a gap in the literature related to e-leadership's affect upon work engagement of virtual workers. This study addressed that gap with three research questions.

RQ1. Are e-leaders' use of electronic communication related to average scores of work engagement in virtual workers? While the null hypothesis for RQ1 was not rejected, the study provided interesting insights into e-leaders use of electronic communications. Of the 203 responses, 164 or 81% indicated the primary means of communication used by the e-leader was text-based communication. Epley and Kruger (2005) found that text-based communications are influenced and reinforced by stereotypes or expectancies. As a result, text-based messages are more likely to be misinterpreted than voice/video communications (Epley & Kruger, 2005). Colbert et al. (2016) also suggested that text-based messages impede relationships by reducing the feeling of closeness, feeling known, and feeling understood. Colbert et al. (2016) cited a 2014 Gallup poll that indicated texting is the preferred means of communication for adults under the age of 50; an enhancement to the current study may have been a question related to the age of the e-leader. The observed statistical power for this part of the analysis was .23. According to George and Mallery (2014), this indicated there was only a 23% chance of finding a significant difference given this sample size. Thus, even with the revision to the research design to reduce the number of groups and increase cell sizes, the number of participants may not have been sufficient to detect an effect related to e-leaders use of electronic communications.

RQ2. Are e-leaders' managerial coaching behaviors related to average scores of work engagement in virtual workers? The null hypothesis for this research question was rejected in that there was an effect for e-leaders managerial coaching behaviors upon virtual workers work engagement scores. The observed statistical power was .703 and

there was a medium effect size estimate ($\eta^2 = .036$). The effect size indicates the proportion of variance in the UWES scores that are predictable from virtual workers with e-leaders who utilized consistent coaching behaviors. Ideally, observed statistical power should have been .80. Thus, there was a 70% chance of detecting an effect that accounts for approximately 4% of the variance in scores for virtual workers with e-leaders who utilized consistent coaching behaviors. This is consistent with research from Bakker and Bal (2010), which found that feedback and coaching from supervisors was positively related to work engagement in a traditional setting. However, with only 4% of the variance in scores attributable to e-leaders coaching behaviors, other factors are clearly contributing to the variance in scores.

RQ3. Will the interaction of e-leaders' use of electronic communication and managerial coaching behaviors be related to average scores of work engagement in virtual workers? As with RQ1, the null hypothesis for RQ3 was not rejected. The observed statistical power for this analysis was .09 meaning there was less than a 10% chance of finding a significant difference given this sample size of 203. The power analysis conducted prior to the study indicated that for an ANOVA with fixed effects, special, main effects and interactions, an effect size of .25, $\alpha = .05$, and power at .80, the sample size needed was 197 participants. The unexpected response pattern of e-leaders electronic communication usage (i.e., 81% text-based communication and 19% voice/video communication) may have affected the study's results.

Conclusions Based on the Results

Leedy and Ormrod (2016) contend that research is an iterative and cyclical process whereby research generates more questions and problems that require further research. The foundation of this study was based upon the results of prior research and the questions that arose from those prior studies.

Comparison of the Findings With the Theoretical Framework and Previous Literature

The current study was based upon two theoretical frameworks: engagement and the job demand resources theory. Work engagement theory has evolved from Kahn's (1990) work on personal engagement and disengagement at work and the psychological conditions that promote or detract from engagement at work. Scholars vary on their definitions and the resulting measurements of engagement (Christian et al., 2011). However, research supports the benefits of having an engaged workforce (Christian et al., 2011; Halgin et al., 2015; Schneider et al., 2009). The definition of work engagement used in the current study was proposed by Schaufeli, Salanova, et al. (2002). While engagement has been studied extensively in traditional environments, a gap existed in the literature relative to work engagement of virtual workers. The current study adds to the literature by measuring work engagement of virtual workers.

The post hoc analysis conducted as part of this study provided further insight into differences in work engagement between virtual workers and those in more traditional work environments. The Total UWES scores for virtual workers (M = 4.37) in this study did differ significantly from those of workers in traditional work environments (M =

4.05). This was contradictory to prior research by Sardeshmukh et al. (2012) who found extensive telework to be negatively related to work engagement. The conflicting finding with Sardeshmukh et al. may be due to difference in the instruments used between the two studies. Sardeshmukh et al. used an instrument developed by Britt. Britt's (1999) view of engagement differed significantly from other researchers in that Britt suggested engagement was focused upon personal responsibility and the triangle model consisting of prescriptions, events, and identities. Alternatively, the findings in the current study may differ from the Sardeshmukh et al. (2012) study due to differences in the samples. The Sardeshmukh et al. study consisted of a sample of professional employees from a large supply chain management company in the Midwestern United States who worked remotely no more than 4 days per week. The current study used a sample of virtual workers who routinely worked from a home office five days per week with limited in person interaction with a supervisor.

The current study also added to the literature on the UWES, the primary instrument used to measure work engagement (Byrne et al., 2106). Reliability of the UWES for the current study, $\alpha = .908$, was consistent the literature in that the median Cronbach's α for the UWES across other samples was .91 (Schaufeli & Bakker, 2004b).

The secondary theoretical framework used in the current study was the job demands resources theory. The job resources of managerial coaching behaviors were a key variable of the current study. Bakker and Bal (2010) demonstrated that job resources such as performance feedback and coaching lead to enhanced feelings of work engagement. Kalkavan and Katrinli (2014) found a positive relationship between

managerial coaching and job satisfaction, role clarity, career commitment, and organizational commitment. The current study supports these findings. There was a statistically significant relationship between e-leaders who demonstrate moderate and consistent coaching behaviors, a job resource, in the virtual work environment and higher levels of work engagement in virtual workers.

Based upon prior research on the impact of media-richness upon effective communication, it was expected that there would be a difference in average scores on virtual workers' worker engagement as an effect of the e-leaders use of electronic communication. In a study on connectivity and leadership, Kolb et al. (2009) found that an increased sense of social connectivity and a greater degree of technical connectivity and the interaction between the two were significant predictors of leader effectiveness. Social connectivity is the quality of the contact with others while technical connectivity is the richness of the media. Given these factors affect how leaders were viewed in terms of effectiveness, it was also anticipated these factors may affect work engagement in virtual workers. The current study did not provide support for these findings.

Interpretation of the Findings

Similar to findings from Xanthopoulou et al. (2009a) and Bakker and Bal (2010), the current study supported managerial coaching as a job resource in that moderate and consistent coaching behaviors influenced virtual workers' levels of work engagement. However, the current study yielded surprising results relative to electronic communications. It may be that the e-leaders writing and language skills in e-mail offset the use of more media-rich communication provided by voice/video options. Research

from Zimmerman et al. (2008) suggested that advanced writing skills were a prerequisite for e-leaders. Motivational language and feedback via text based messages by e-leaders may promote work engagement in much the same manner as it did creativity and team performance (Fan et al., 2014).

Virtual coaching has received limited attention in the research literature. Bettie et al. (2014) suggested there may be differences in how virtual coaching was perceived based upon generational differences. The current study did not differentiate age by generational cohorts. However, a cross tabulation of e-leader's coaching levels by age was produced in SPSS and it did not appear that virtual coaching was influenced by age in the current study. Filsinger (2014) suggested that virtually mature organizations would provide robust technology to support virtual coaching. Given the high percentage of responses indicating the e-leader relied upon text-based communications, either the respondents in the current study were not employed by virtually mature organizations or e-leaders are not using available technology.

Shen et al. (2011) suggested, "investigation into more complex and subtle relationships will be stymied by inadequate sample sizes" (p. 1060). Despite a priori power analysis, based upon the observed statistical power of .23 the current study may not have sufficient responses to detect a relationship between e-leaders use of electronic communication media and virtual workers level of work engagement.

Limitations

The research design elements of this study precluded an inference of causality. The self-report nature of the data collected may have been subject to careless or

acquiescence responses (Kam & Meyer, 2015). As previously noted, the sample size of the current study was too small. The power analysis conducted a priori could have been improved by modifying the G*Power 3.1.9.2 (Faul et al., 2009) entry. The entry could have included power at .95 rather than .80, which may have resulted in improved observed power in the final analysis.

Another limitation of the study was the type of data collected. Specifically, the virtual worker was asked questions about his or her e-leader. Questions related to the electronic communications and ICT usage by the virtual workers may have enhanced the current study. For example, the addition of survey questions related to digital fluency, gamification, and collaborative knowledge-sharing platforms may have provided further insight into how electronic communication and ICT interacts with or affects work engagement in the virtual worker. Also, the inclusion of the e-leader's perspective may have added greater dimension and an opportunity to triangulate the data in the current study.

Implications for Practice

Business and organizational leaders are interested in improving organizational outcomes such as performance and ensuring investments in technology are producing desired results. The current study provides meaningful insights to these stakeholders. First, the current study supports prior research on managerial coaching's influence upon work engagement in a new context, that of the e-leader with a virtual worker. This suggests that training and promotion of managerial coaching skills is an important ability for e-leaders. Based upon survey responses in the current study, virtual workers

recognize coaching behaviors of e-leaders and these behaviors may influence the level of work engagement. Next, the study suggests media-rich technologies are either not available or not fully utilized by e-leaders. Training on the use of these technologies or training on the importance of media-rich communications may be an area for improvement in organizations.

Recommendations for Further Research

This study was designed to understand the relationship between leaders' electronic communication and coaching behaviors with virtual workers' levels of engagement. There was a significant finding for the second research question, are e-leader's managerial coaching behaviors related to average scores of work engagement in virtual workers? Shen et al. (2011) suggested replication and generalization should be the cornerstones of research. Future research should include a longitudinal study of virtual workers to confirm these findings. This research should incorporate input from the e-leader to broaden the perspective of the findings. It should also incorporate a larger and perhaps more homogeneous sample at one or two organizations with a large number of virtual employees and e-leaders.

The current study also produced unexpected findings in terms of the percentage of e-leaders relying on text-based communication. Further research is needed to determine why e-leaders are relying upon text-based types of communication and not using alternative media-rich communication technologies when available. The current study also supports the call of Colbert et al. (2016) for research on methods to "encouraging mindful usage" of technology (p. 735).

An additional area for further research is related to the effectiveness of managerial coaching behaviors. An enhancement to the current survey would have asked participants to rate the seven coaching behaviors in order of effectiveness. Hagen and Peterson (2015) suggested that identifying coaching expertise was essential to managerial leadership. The Ellinger Behavioral scale asked about coaching behaviors demonstrated by the e-leader. However, the coaching scale did not provide the participant the opportunity to indicate if the participant thought these behaviors were helpful or effective.

Conclusion

This dissertation was conducted to fill a gap in the research literature related to e-leadership's affect upon work engagement of virtual workers. Specifically, e-leader communication and managerial coaching behaviors were assessed by virtual workers and the virtual worker's level of engagement was measured using the Utrecht Work Engagement Scale (UWES, Schaufeli & Bakker, 2004b) via a self-report online survey. The primary theoretical framework for the study was engagement and the secondary theoretical framework was the job demands resources theory. Managerial coaching behaviors were found to significantly be related to worker engagement levels in virtual workers, which aligns with prior research (Bakker & Bal, 2010). Electronic communications were not found to have a significant relationship with levels of virtual worker's work engagement levels. Post hoc testing indicated UWES scores for virtual workers did differ significantly from scores for traditional workers in the UWES

database. These findings add to the literature on work engagement, virtual workers, managerial coaching, e-leadership, and electronic communications.

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STATEMENT OF ORIGINAL WORK

Academic Honesty Policy

Capella University's Academic Honesty Policy (3.01.01) holds learners accountable for the integrity of work they submit, which includes but is not limited to discussion postings, assignments, comprehensive exams, and the dissertation or capstone project.

Established in the Policy are the expectations for original work, rationale for the policy, definition of terms that pertain to academic honesty and original work, and disciplinary consequences of academic dishonesty. Also stated in the Policy is the expectation that learners will follow APA rules for citing another person's ideas or works.

The following standards for original work and definition of *plagiarism* are discussed in the Policy:

> Learners are expected to be the sole authors of their work and to acknowledge the authorship of others' work through proper citation and reference. Use of another person's ideas, including another learner's, without proper reference or citation constitutes plagiarism and academic dishonesty and is prohibited conduct. (p. 1)
>
> Plagiarism is one example of academic dishonesty. Plagiarism is presenting someone else's ideas or work as your own. Plagiarism also includes copying verbatim or rephrasing ideas without properly acknowledging the source by author, date, and publication medium. (p. 2)

Capella University's Research Misconduct Policy (3.03.06) holds learners accountable for research integrity. What constitutes research misconduct is discussed in the Policy:

> Research misconduct includes but is not limited to falsification, fabrication, plagiarism, misappropriation, or other practices that seriously deviate from those that are commonly accepted within the academic community for proposing, conducting, or reviewing research, or in reporting research results. (p. 1)

Learners failing to abide by these policies are subject to consequences, including but not limited to dismissal or revocation of the degree.

Statement of Original Work and Signature

I have read, understood, and abided by Capella University's Academic Honesty Policy (3.01.01) and Research Misconduct Policy (3.03.06), including Policy Statements, Rationale, and Definitions.

I attest that this dissertation or capstone project is my own work. Where I have used the ideas or words of others, I have paraphrased, summarized, or used direct quotes following the guidelines set forth in the APA *Publication Manual*.

Learner name and date: Wendy Anson 8/9/2017

APPENDIX

Selected Demographic Characteristics of Home-Based Workers: 2010
(Civilian employed age 15 years and older; numbers in thousands)

Characteristic	Total Home-Based Workers[1]		Self-Employed		Employees	
	Number	Percent	Number	Percent	Number	Percent
Total	9,374	100	4,216	100	5,158	100
Age						
15 to 24 years	447	4.8	126	3	321	6.2
25 to 34 years	1,330	14.2	449	10.7	881	17.1
35 to 44 years	2,108	22.5	773	18.3	1,335	25.9
45 to 54 years	2,539	27.1	1,240	29.4	1,299	25.2
55 to 64 years	1,976	21.1	1,057	25.1	918	17.8
65 years and over	976	10.4	571	13.5	405	7.8
Sex						
Male	4,806	51.3	2,397	56.9	2,409	46.7
Female	4,568	48.7	1,819	43.1	2,749	53.3
Race and Hispanic Origin						
White, alone	8,151	87	3,701	87.8	4,450	86.3
White, non-Hispanic, alone	7,610	81.2	3,486	82.7	4,123	79.9
Black, alone	659	7	269	6.4	390	7.6
Asian, alone	353	3.8	140	3.3	213	4.1
All other races, alone or in combination	211	2.3	106	2.5	105	2
Hispanic, of any race, alone or in combination	588	6.3	240	5.7	348	6.7
Educational Attainment						
Less than high school diploma	495	5.3	261	6.2	234	4.5
High school graduate	1,327	14.2	657	15.6	670	13
Some college / Associate's degree	2,815	30	1,372	32.5	1,442	28
Bachelor's degree or more	4,738	50.5	1,925	45.7	2,813	54.5
Metropolitan Status						
Non-metropolitan	1,608	17.2	792	18.8	816	15.8
Metropolitan	7,766	82.8	3,424	81.2	4,342	84.2
Region of Residence						
Northeast	1,553	16.6	650	15.4	903	17.5
Midwest	2,048	21.8	940	22.3	1,108	21.5
South	3,202	34.2	1,417	33.6	1,784	34.6
West	2,571	27.4	1,209	28.7	1,363	26.4

Selected Demographic Characteristics of Home-Based Workers: 2010 Continued

Class of Worker						
Private for-profit	3,332	35.5	---	---	3,332	64.5
Private not-for-profit	481	5.1	---	---	481	9.3
Local government	370	3.9	---	---	370	7.2
State government	303	3.2	---	---	303	5.9
Federal government	93	1	---	---	93	1.8
Unpaid family	491	5.2	---	---	491	9.5
Self-employed	4,216	45	4,216	100	---	---
Not otherwise classified	90	1	---	---	90	1.7
Industry						
Agriculture, forestry, fishing, and hunting, and mining	556	5.9	306	7.3	250	4.8
Construction	533	5.7	338	8	195	3.8
Manufacturing	689	7.4	206	4.9	483	9.4
Wholesale trade	269	2.9	91	2.2	179	3.5
Retail trade	524	5.6	344	8.2	180	3.5
Transportation and warehousing and utilities	180	1.9	81	1.9	99	1.9
Information	316	3.4	65	1.5	250	4.8
Finance and insurance, and real estate, and rental and leasing	1,140	12.2	387	9.2	752	14.6
Professional, scientific, and management, and administrative and waste management	2,177	23.2	1,296	30.7	881	17.1
Educational services, and health care and social assistance	1,741	18.6	517	12.3	1,223	23.7
Arts, entertainment, and recreation, and accommodation and food services	468	5	304	7.2	164	3.2
Other services, except public administration	560	6	277	6.6	283	5.5
Public administration	217	2.3	2	0	215	4.2

Selected Demographic Characteristics of Home-Based Workers: 2010 Continued

Occupation						
Management, business, and financial occupations	2,595	27.7	1,283	30.4	1,311	25.4
Professional and related occupations	2,635	28.1	1,056	25.1	1,579	30.6
Service occupations	1,116	11.9	567	13.4	549	10.6
Sales and related occupations	1,247	13.3	603	14.3	644	12.5
Office and administrative support occupations	818	8.7	162	3.8	656	12.7
Farming, fishing, and forestry occupations	199	2.1	73	1.7	126	2.4
Construction and extraction occupations	249	2.7	172	4.1	77	1.5
Installation, maintenance, and repair occupations	166	1.8	78	1.8	88	1.7
Production, transportation, and material moving occupations	345	3.7	222	5.3	123	2.4

Footnotes:

1/ Onsite workers are defined as those who did not work a full workday at home as part of their work schedule. This category was called non-home workers in previous table packages.

Source: U.S. Census Bureau, Survey of Income
and Program Participation, 2008 Panel, Wave 5