Lifting the VEIL of Virtual Leadership

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Abstract

Virtual working arrangements have become an important component of the operating model for businesses to consider for a variety of reasons, including recruitment of top talent, globalization of workforce, and reduction in operational overhead. Concomitant with this evolving pattern of organizational structure, there has been debate in the literature contrasting the effectiveness of virtual teams to the effectiveness of co-located (face-to-face) teams. While virtual-team-focused literature has recently begun to concentrate on virtual leadership attributes versus task-orientation and/or technology, little research has been conducted to more fully understand the impact of emotional intelligence on the overall work engagement of virtual teams. Of the research conducted on the influence of emotional intelligence on virtual teams, the primary focus has been on the individual contributors of the team rather than on the leadership. This cross-sectional, quantitative study examined the impact of 26 virtual leaders’ emotional intelligence as assessed by the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) on the overall work engagement of 107 virtual team members measured through Utrecht’s Work Engagement Scale (UWES). As hypothesized, a positive and significant correlation was found between the overall emotional intelligence of the leader and the overall work engagement of virtual team members as well as with the dimensions of vigor and dedication. No significant correlation was found with the dimension of absorption. The Virtual Emotionally Intelligent Leader (VEIL) model of virtual leadership defined in this study begins to broaden the body of literature for
leadership, emotional intelligence, and work engagement within the virtual environment.
Dedication

This dissertation is dedicated to my dad, Timothy Lynn Sebastian.

“I can do all things through Christ who strengthens me.” Philippians 4:13
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Chapter 1: Introduction

Virtual work arrangements have become an important aspect of operating models for businesses to consider for a variety of reasons, including the recruitment of top talent, the globalization of workforce, and the continual pressures of reduction in operational overhead. With a vast and rapid expansion of technology providing substantial opportunity for connectivity regardless of location, there is an increasing interest among scholars and practitioners to understand the effective dynamics of virtual working environments.

This research investigated the correlation between leaders’ emotional intelligence and the work engagement of virtual team members. Chapter 1 presents the background of the study, specifies the problem studied, describes the purpose and significance of the research, and presents an overview of the methodology employed.

Background

Since the introduction of the World Wide Web in 1992, the digital revolution (including software and communication mediums) has evolved at a rapid pace, essentially shifting the manner in which individuals socialize, exchange information, and, ultimately, conduct business. This new paradigm is symbolized by rapid transformation in the technological mediation through which individuals encounter one another (Baym, 2015). According to the Statistical Abstract of the United States: 2012, 78.9% of households owned a computer while 74.8% had internet connectivity
The rate of connectivity is increasing exponentially; so much so that the industry now refers to the magnitude of connected devices as the Internet of Things (IoT). The Global Standards Initiative (2012) defined IoT as a network of devices, which contain embedded technology to communicate, sense, or interact with internal states or external environments through unique identifiers without requiring human-to-human or human-to-computer interaction. IoT is considered the gateway for remote monitoring, connectivity, and “virtualness,” (i.e., the state of being virtual) to consumers and businesses. Given that the rapid expansion of technology has increased connectivity regardless of location, there is an increasing interest among workers and organizations to integrate an effective state of team virtualness within existing operating models.

Despite the information and digital transformation of society over the last quarter century, the exponential expansion of technology, and the desire for improved efficiencies in workforce, there is much debate in the literature regarding the effectiveness of virtual teams. Several meta-analyses comparing the effectiveness of co-located (face-to-face) teams to virtual teams suggest the latter are less effective (Baltes, Dickson, Sherman, Bauer, & LaGanke, 2002; Benbasat & Lim, 1993; Dennis, Wixom, & Vandenbarg, 2001; Fjermestad, 2004; Mesmer-Magnus, DeChurch, Jimenez-Rodriguez, Wildman, & Shuffler, 2011; Ortiz de Guinea, Webster, & Staples, 2012). In spite of this research, virtual environments have become an important aspect of operating models for businesses to consider. The
Institute for Corporate Productivity (2008) conducted a survey of 250 organizations in 2008, 67% of which indicated an increased reliance on virtual teams within their respective companies over a three-year span. Subsequently, the Society of Human Resource Management (2012) conducted a separate survey finding that 66% of global organizations were indeed using virtual teams. Researchers have suggested virtual teams provide many benefits to organizations by increasing adaptability in addition to supporting the aforementioned performance metrics (Avolio, Surinder, & Dodge, 2000; Bell & Kozlowski, 2002; Dundis & Benson, 2003; Robbins & Judge, 2007), yet the debate persists on the overall effectiveness of this non-traditional operating model.

**Problem Statement**
Given the ongoing debate of the effectiveness of virtual teams, the question arises as to the efficacy of traditional leadership theory in this non-co-located world. More specifically, recognizing that fundamental basic human emotions exist regardless of co-location, it may be theorized that the impact of a virtual leader’s emotional intelligence is valuable even in a non-co-located environment. Further examination of methods to drive effectiveness in virtual teams will aid organizations, leaders, and the overall virtual workforce to meet the ever-evolving demands of the digital age. The objective of this quantitative research was to examine the impact that the emotional intelligence of a leader may or may not exert on the work engagement of virtual team members within a mid-size medical consulting firm. Participation in the study was open to all leaders and employees within the organization, of which a total of 26
leaders (68.4%) and 130 employees (73.4%) located across the United States volunteered by completing the MSCEIT and/or UWES online. The results of this study provide key insights to assist both practitioners and researchers in further understanding the association of leadership emotional capabilities and the impact of work engagement within virtual teams.

**Significance of Study**
The purpose of this study was to understand the impact of the emotionally intelligent leader on employee engagement in the context of virtual work teams. This study was meaningful because virtual environments have become an important aspect of the overarching operating model for businesses. Unfortunately, organizations have struggled to find a satisfactory balance in virtual arrangements. Purvanova (2014) suggested that virtual teams face tremendous challenges, including general misunderstandings and poor team leadership. Sawyer and Guinan (1998) deemed social process skills, such as conflict resolution, to be more relevant than task skills in important virtual team settings in order to prevent practices that will hinder organizational performance (Chidambaram & Tung, 2005). Furthermore, Gilson, Maynard, Young, Vartiainen, and Hakonen (2015) highlighted the importance of leadership, citing that leaders will continue to play a vital role in the performance of virtual teams, specifically in the way they influence how the team handles challenges and adapts in the context of those challenges.
In traditional environments, leadership has been touted as the cornerstone of team success. Hess and Benjamin (2015) espoused that leaders who connect with their own emotions are more adept in managing frustration and anxiety associated with setbacks and even failure. Leaders who have the ability to discern the group’s norms while maximizing positive emotions can create highly emotionally intelligent teams (Goleman, Boyatzis, & McKee, 2002). Druskat and Wolff (2001) indicated the most effective teams are emotionally intelligent ones and advocated that any team can attain emotional intelligence.

Linking the domains of virtual leadership, emotional intelligence, and work engagement of virtual team members has the potential to enrich the overall effectiveness of virtual environments. Specifically, this study is significant in that it provides insights into understanding whether the correlational attributes found in co-located teams transcend into the virtual environment as it relates to emotional intelligence and work engagement. The significance of the study is furthered by the fact that it will be an original contribution to the literature, given that no literature was found examining the relationship of virtual leaders’ emotional intelligence and the work engagement of virtual team members.

**Past research**

Previous research conducted on the effectiveness of virtual teams focused predominately on the effectiveness of emotional intelligence of the virtual team members themselves, as opposed to the emotional intelligence of the leader. This
appears to overlook decades of research and theories of the considerable impact of leadership on the effectiveness and engagement of teams. In *Leadership: Theory and Practice*, Northouse (2010) represented “leadership as a process whereby an individual influences a group of individuals to achieve a common goal” (p. 3), expounding that leadership does not exist without the component of influence. Existing virtual team literature, by virtue of focusing on individual member emotional intelligence, is deficient of key attributes of leadership theory. Certainly an individual can perform independently; however, with leader influence and guidance, an individual develops and prospers from the additional insight, knowledge, and challenge provided by the leader. More specifically, transformational leadership, a style of leadership that engages with others to create connections that raise the level of motivation and morality in both the leader and the follower, is concerned with the collective good, which transcends a leader’s own interest for the sake of others (Northouse, 2009). Wang and Huang (2009) reported that transformational leadership was positively affected by emotional intelligence and built group cohesiveness.

Drucker (1967) acknowledged that the effective leader builds on strengths. Strength-based leadership suggests that every human has naturally innate talents that, when coupled with knowledge and skill, become an individual strength (Rath & Conchie, 2008). When individuals focus on innate abilities, performance outcomes are at a high level of consistency or are near perfect performance. A strength is not just a
competency in skill; a strength is a feeling coupled with a strong emotion of involvement to increase engagement, which in turn increases productivity.

Leaders demonstrating astuteness of group norms and proficiency in maximizing positive emotions have the ability to create highly emotionally intelligent teams (Goleman et al., 2002). Zhou and George (2003) concluded that emotional intelligence can enhance leadership within team settings, while Dulewicz and Higgs (2003) discovered that emotional intelligence among managers correlated positively with the quality of work life and morale. Numerous studies have identified emotional intelligence as a significant factor in job performance and effectiveness (Hess & Benjamin, 2015).

**Deficiencies in Past Research**
Despite the vast research on virtual teams, emotional intelligence, leadership theory, and work engagement, a comprehensive literature review found no studies examining the relationship of virtual leaders’ emotional intelligence and the work engagement of virtual team members. Research conducted by Mahon, Taylor, and Boyatzis (2014) examined 231 co-located team members from two organizations and found no correlation between the emotional intelligence of individual employees and the work engagement specifically associated with shared vision, shared positive mood, and perceived organizational support. Focusing on the emotional intelligence of individuals to drive engagement omits the impact of leadership theory, whereby House et al. (1999) defined leadership as “the ability of an individual to influence,
motivate, and enable others to contribute toward the effectiveness and success of the organization” (p. 184). Of studies similar in proximity to the proposed exploration, the research conducted utilized simulated environments, as opposed to field-based settings. Hence, the findings generated from this study will provide constructive insights to advance the domains of virtual leadership, virtual teams, emotional intelligence, and work engagement.

**Audience Who Will Profit from the Study**

Companies that better understand how to overcome the challenges of operating virtual teams will be positioned to improve operational performance with the reduction of overhead costs associated with office space. Specifically, understanding the key attributes necessary to effectively employ virtual teams within organizations will benefit stakeholders in domestic and global organizations in a variety of ways. These benefits include the reduction of overhead, the ability to recruit top talent regardless of location, and the increase in overall work engagement in the virtual workforce, ultimately improving client satisfaction. As virtual leaders improve their own effectiveness, virtual team members will directly benefit as a result. Lastly, providing insights on virtual team engagement within a field-based setting, as opposed to a simulated environment, aims to fill existing gaps in academic research associated within this discipline.
Overview of Methodology

Quantitative studies are most commonly utilized to examine causal relationships and correlations between variables (Leavy, 2017). A quantitative approach seeks to build evidence for or refute a specific theory and/or hypothesis.

This study utilized the ability model of emotional intelligence originally constructed and defined by Salovey and Mayer (1990) as “the ability to monitor one’s own and others feelings and emotions, to discriminate among them, and to use this information to guide one’s thinking and action” (p. 189). The ability model of emotional intelligence is considered a unique intelligence, comprised of four measurable abilities (perceive emotion, use emotion, understand emotions, and manage emotion), which enable understanding and reasoning through emotional information, combining thought and emotion to effectively perform in specific situations (Mayer & Salovey, 1997). Furthermore, research has determined that socially capable individuals are recognized to have a well-developed theory of mind skills, making them more attuned to the emotions and intentions of others, including enabling them to make accurate interpretations of situations, influence the emotions and behaviors of others, and predict what others think or believe (Kaukiainen et al., 2008; Sutton, Smith, & Swettenham, 1999). Additionally, the current study was premised on the extensive research on leadership theory, which advocates that leaders primarily exist to influence a group of individuals to achieve common objectives. Finally, the study
intended to deepen the understanding of how leadership’s social capabilities and emotional intelligence manifest in the non-traditional virtual environment.

This quantitative study examined the relational effect a leader’s emotional intelligence asserts, if any, on the work engagement of virtual team members using Salovey’s and Mayer’s (1990) ability theory of emotional intelligence. Existing valid and reliable assessments were employed to compare responses in order to ascertain the relationship of the two variables. The independent variable, which is the leaders’ emotional intelligence ability, was measured by team leaders completing the computerized Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) administered by Multi-Health Systems. The dependent variable, which is work engagement as determined through vigor, dedication, and absorption of the work group, was measured by virtual team members anonymously completing Utrecht’s Work Engagement Scale (UWES) administered through an online survey method. A correlation analysis was performed to ascertain the association between the two variables, leaders’ emotional intelligence, and the work engagement of virtual team members.

**Philosophical Assumptions**

According to Slife and Williams (1995), philosophical ideas remain largely hidden in research, yet as influencers, it is important to explicitly identify these biases/assumptions. Creswell (2009) highlighted that post-positivist assumptions are primarily at the core of quantitative studies guided by deterministic philosophy,
which asserts that causes conceivably determine outcomes, and reductionist reasoning, which reduces ideas into distinct variables to test assumptions. Creswell (2009) also claimed that the approach to post-positivist research is to collect data to either support or refute a theory.

As I embarked on this research journey, my philosophical assumptions resulted from my own leadership experiences in a virtual environment. As a researcher, I wanted to gain a deeper understanding of the influence emotional intelligence of a leader had on the work engagement within the virtual ecosystem. I had the fortune to pioneer a virtual workforce during my career in the wireless/telecommunications industry. There was an assumption held by some leadership that virtual teams were unproductive because they were not “visible.” I use quotation marks around the word visible because there tends to be a notion when people are not physically visible, they are not working. A trust factor must exist in a virtual environment, as in a co-located environment, that individuals are doing their job, unless performance measures indicate otherwise. In a virtual environment, visibility is associated with much more than physical presence. “Visibility” can be measured by availability, response time, and performance results to name a few. This research does not seek to validate or expound on visibility. However, as an example of visibility measurement, within the first year of existence, my virtual team was one of the highest producing teams in the company, held the highest engagement score among our department, and scored nearly 15 points higher than the overall company average. As I began to research
virtual organizations, I found that organizations were struggling with the overall idea of virtualness; specifically, they were struggling with how to operationalize and, most importantly, how to manage and lead in a virtual environment. This was true even in companies notorious for their culture and work engagement.

This experience prompted my thinking into what aspects of leadership could drive this level of performance of a 40 member virtual team. No one in the group had participated in a virtual environment previously, so virtual experience was not a factor. As I started to look at variables, the idea of the impact of emotional intelligence began to percolate. The element of emotional intelligence stood out to me because I had been educating and developing the leaders on my team around this particular leadership theory. I wanted to explore if this could be the positive correlation in the significant work engagement scores we were receiving. Hence, the purpose of the study.

**Structure**

This dissertation is comprised of five additional chapters. Chapter 2 focuses on the current literature associated with this study. The literature review includes the topics of leadership theory specific to emotional intelligence in leadership, leadership of virtual teams, virtual teams, and work engagement. Chapter 3 provides details of the study’s methodology such that one would be able to replicate the study. Chapter 4 discusses the data analysis and specific findings of the research conducted. Chapter 5 provides insights into the value of the research and discusses how the findings
contribute to the body of work surrounding emotional intelligence, virtual teams, and work engagement. The Virtual Emotionally Intelligent Leader (VEIL) model is introduced as a construct based on the findings within the study. The paper concludes in Chapter 6 with a discussion of recommendations for future research.
Chapter 2: Literature Review

For the purpose of this study, the concepts of leadership theory, leadership in virtual
teams, emotional intelligence, work engagement, and virtual teams will be the focus
of the literature reviewed. The scarcity of literature on leadership in virtual teams is
note-worthy. While the amount of literature reviewed for leadership theory, emotional
intelligence, virtual teams is extensive, only four articles were discovered specific to
leadership in virtual teams, and no literature was discovered regarding work
engagement in virtual teams. I have continued to scour the topics throughout the
dissertation process. While I have come across ongoing developing research specific
to virtual teams, most is still primarily focused on the task orientation of the team
members while some have ventured into how emotional intelligence of team
members might influence the virtual environment.

Leadership Theory

Leadership theory literature is dynamic, stimulating debates across social sciences
regarding definition, characteristics, skill, abilities, learned, and/or innate (Avolio,
Sosik, Jung, & Berson, 2003; Bass, 1990; Bennis, 2007). Multiple studies assert that
individual characteristics, including skills, abilities, and personality traits, predict
leadership effectiveness (Eagly, Karau, & Makhijani, 1995; Judge, Bono, Ilies, &
Gerhardt, 2002; Judge & Piccolo, 2004; Judge, Piccolo, & Ilies, 2004). Given the
magnitude of literature on leadership, this review focused narrowly on the impact of
leadership effectiveness on team engagement and the associated constructs.
Derue, Nahrgang, Wellman, and Humphrey (2011) asserted that leadership effectiveness criteria can be considered within three dimensions: (a) content of leadership effectiveness encompassing task and relational elements, (b) level of analysis inclusive of dyadic-level relationships, group performance, or organizational performance, and (c) target of evaluation specific to leader or other domains of leader effectiveness not specific to the leader. Barrick and Mount (1991) determined that, aside from intelligence, conscientiousness (the extent a person is dependable, dutiful, and achievement oriented), openness to experience (imaginative, curious, and open minded to new and different ways of working), and emotional stability (ability to remain calm and not easily upset when faced with challenges) were all descriptors of how one approaches and reacts to tasks; henceforth, task competence. Subsequently, Judge et al. (2002) found in a meta-analysis that all three of the aforementioned descriptors were positively related to leadership effectiveness. DeRue et al. (2011) noted that “transformational leadership is the most consistent predictor within the behavioral leadership paradigm while conscientiousness was the most consistent trait predictor of leadership effectiveness” (p. 37). In the systematic review of various leadership styles conducted by Pearson et al. (2007), emotional intelligence (EI) capability continues to be a key theme of effective leadership while leaders with EI capability are highly likely to positively affect team and organizational culture, which was also identified by Murphy (2005), with suggested links between the capabilities of transformational leadership and those of EI (Akerjordet & Severinsson, 2010).
**Emotional Intelligence in Leadership**

Since the introduction of emotional intelligence in 1990, debate persists on the relevance of EI, despite the growing body of empirical research demonstrating its validity (Ashkansasy & Daus, 2005; Kanfer & Ackerman, 2000; Kanfer & Heggestad, 1997; Mahon et al., 2014; O’Boyle, Humphrey, Pollack, Hawver, & Story, 2011; Papadogiannis, Logan, & Sitarenios, 2009; Schmitt, Cortina, Ingerick, & Wiechmann, 2003). Criticism has generally hailed from the perspective that constructs with substantial empirical overlap that are theoretically similar to the extent that neither of the constructs offer efficacy over another (Conte, 2005; Locke, 2005; Matthews, Zeidner, & Roberts, 2002; Murphy, 2006; Schulte, Ree, & Carretta, 2004). However, meta-analytic findings have consistently supported the incremental validity of EI (both ability and mixed model EI) over and above personality (Joseph & Newman, 2010; O’Boyle et al., 2011; van Zyl & de Bruin, 2012).

In the context of leadership, Grewal and Salovey (2005) utilized Mayer and Salovey’s (1997) original definition of emotional intelligence (a set of capabilities that focus on an individual’s capacity to access, monitor, and discriminate between one’s own emotions and those of others) to apply EI within the relational and social attributes of leadership. Socially capable individuals are recognized as having a well-developed theory of mind skills, making them more attuned to the emotions and intentions of others, including enabling them to make accurate interpretations of situations, influence the emotions and behaviors of others, and predict what others think or
believe (Kaukiainen et al., 2008; Sutton et al., 1999). Ayoko, Callen, and Härtel (2008) identified EI climate as an important moderator in the link between conflict and team members’ reactions to conflict. Given leader influence, one would expect the leader’s emotional intelligence to be a substantial factor in the overall climate of the team. Dulewicz and Higgs (2003) posited that emotional intelligence is a critical factor of effective leadership for today’s organizations. Furthermore, Cummings, Hayduk, and Estabrooks (2005) and Feather (2009) linked EI to resonant leading, a style of leadership that seeks to minimize the emotional impact of organizational change on team members. Resonant leaders are empathetic and supportive of the needs of their teams while also effectively managing their own emotions; they are, therefore, able to develop effective relationships with others (Hutchinson & Hurley, 2013). Goleman (1996) identified a resonant leader as one who is in touch with feelings of others and is able to move individuals in a more positive emotional direction, connecting with followers, which results in feelings of motivation and inspiration while creating a more positive and productive work environment (Hess & Benjamin, 2015). Conversely, Goleman et al. (2002) attributed dissonant leadership to the failure to connect with others, being insensitive to others reactions, which creates distance between the leader and the followers. Consequently, coworkers are off-balance, feel disconnected, and perform poorly.

Kouzes and Posner (2006) and Wheatley (2006) described a successful leadership trait as understanding not only one’s emotions but those of others as well. EI
capabilities can be linked to various leadership styles, encompassing the capacity to inspire and empower others and to enable leaders’ behaviors to be more congruent with the beliefs and values of organizational members (Duignan & Narottam, 1997). Furthermore, Dulewicz and Higgs (2003) found in a seven-year longitudinal study that emotional intelligence was significantly more important than intellect in the career progression of managers. Hess and Benjamin (2015) posited that the emotionally intelligent leader focuses on the development of self and others:

> Emotionally intelligent leaders learn to assess their own strengths and weaknesses and complement those characteristics with those surrounding them. Additionally, these leaders exhibit the trait of developing others not just for the benefit of the organization but also the professional and personal growth of the individuals themselves. Rather than feeling threatened by the individuals under them, EI leaders concerned about relationship management will develop those individuals into executives who are equipped to deal with setbacks, hardships, and failures. (Hess & Benjamin, 2015, p. 118)

These studies are indicative of the relevance emotional intelligence plays in the leadership theory.

**Leadership in Virtual Teams**

As virtualness becomes more prevalent, the question arises whether or not existing leadership theory and practices will remain relevant for the future. Bolden, Gosling, Hawkins, and Taylor (2011) noted that the models of leadership today are founded on face-to-face interaction. While Ruggieri (2009) determined that these models can be extended to virtual teams, Zigurs (2003) argued that virtual teams provide a unique opportunity to redefine leadership.
In a comparative study, Purvanova and Bono (2009) ascertained that transformational leadership was equally important in face-to-face and virtual teams and, ultimately, exhibited a stronger influence on the performance of virtual team environments. Wadsworth and Blanchard (2015) sought to understand influence tactics manifested and enacted within virtual teams and determined that ambiguity reduction, used only by the virtual leader, required a certain level of empathy and perspective that necessitates a knowledge of the person being influenced. This was a neoteric influence tactic, which emerged within the research specific to virtual teams’ need to mediate misinformation. As Hess and Benjamin (2015) pointed out, leaders need to choose the applicable leadership style in order to achieve positive outcomes:

Leaders play many roles including inspirer, developer, and change agent while determining the appropriate style to create the team climate. Choosing the correct leadership style will lead to positive interactions, encouraging others to be supportive, and committee to subsequent endeavors. (Hess & Benjamin, 2015, pp. 113–114)

As in co-located environments, virtual leaders will need to choose the applicable leadership style in order to achieve the most effective outcomes for their team.

**Virtual Teams**

Virtual teams are defined in the literature with slight nuances, yet one factor remains synonymous with the nomenclature—members of the team are not face-to-face and communicate through various mediums of technology, including but not limited to audio and video conferencing, chat rooms, instant messenger, and file and application sharing, in addition to other virtual reality options (Driskell, Radtke, & Salas, 2003;
Olson & Olson, 2000; Wadsworth & Blanchard, 2015). Sarker, Valacich, and Sarker (2003) took a more definitive approach to defining virtual teams as geographically dispersed, lacking shared social context and face-to-face encounters, while Kirkman and Mathieu (2005) explained that geographical distance is not a requisite for a team to be considered virtual, only that the members utilize virtual means to communicate and adopt tasks.

According to Malhotra, Majchrzak, Carman, and Lott (2001), technology-deterministic theory indicates that virtual teams will perform more poorly, compared with face-to-face teams, because of imposed challenges (as cited in Purvanova, 2014) some of which are the fundamental attributes of team forming, norming, and storming, which look different in virtual teams than traditional co-located peers. McGrath (1991) identified team performance activities that address three distinctly different types of outcomes simultaneously: (a) task performance, (b) social relationship/wellbeing inclusive of developing and maintaining of good social relationships among team members, and (c) individual development. It is expected that these three components hold true for virtual teams, albeit how these are performed are relatively different. Nonetheless, a good balance between these focus areas are important for effective team functioning (McGrath, 1991).

Liu (2012) suggested that Technology-Task Fit (TTF) and self-disclosure (revealing information to others) are fundamental functions of virtual teams, which precede
working ties (interaction between team members), ultimately progressing performance and satisfaction outcomes. Self-disclosure plays a key role in the development of social relationships, which have gradually been considered important in the development of virtual teams (Nandhakumar & Baskerville, 2006; Newell, David, & Chand, 2007). Ultimately, humanistic attributes of team dynamics remain true regardless of co-location. Patel, Pettitt, and Wilson (2012) espoused that the important factors essential for collaboration are culture, trust, interaction processes, teams, and tasks; furthermore, Gautier, Bassanino, Fernando, and Kubaski (2009) indicated that communication is a core element in creating a collaborative culture. Pornsakulvanicha, Haridakis, and Rubin (2008) noted that self-disclosure is a significant positive predictor of online relationship closeness and positively predicts communication satisfaction (Liu, 2012). As technology advances, team attributes can occur regardless of proximity. Munro and Swartzman (2013) professed that “there are various ways technology can help people work together” (p. 2435). In a review of eight studies with meta-analyses highlighting differences between face-to-face and virtual workplace related outcomes, Malhorta et al. (2001) found literature that touts that face-to-face teams have better performance, greater efficiency, better communication, and shorter decision making time, while virtual teams generated better ideas (as cited in Purvanova, 2014). Inversely, virtual teams in 20 field research studies found that virtual consultant projects brought in significantly more revenue than traditional consultant projects, with 85% of the teams in these studies achieving
performance management expectations. IBM and US West (Centurylink) indicated a 14 to 40% increase in productivity amongst virtual teams (Purvanova, 2014).

There are sufficient benefits to evolving team structure beyond the co-located, face-to-face, traditional team. Virtual teams help organizations manage the globalization of business, the movement toward horizontal organizational structures, and customers’ demands for increased efficiency (Avolio et al., 2000; Bell & Kozlowski, 2002; Driskell et al., 2003; Dundis & Benson, 2003), in addition to cost reduction of logistical expense and increased adaptability (Robbins & Judge, 2007).

**Work Engagement**

Aon Hewitt (2013) asserted that employee engagement is in decline in the United States, with only 40% of employees conveying that they are engaged. This staggering statistic highlights the need for organizations to tap into new areas to bolster the connection with their workforce. Schaufeli and Bakker (2004) defined work engagement as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption.” (p. 295) Vigor is the willingness to invest effort into one’s work and refers to high levels of persistence, energy, and mental resilience while working. Dedication is being strongly involved in one’s work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption is full immersion in one’s work such that time passes quickly and one has difficulties detaching oneself from work. Higher emotional intelligence has been linked to
improved team collaboration, higher job satisfaction, and lower turnover (Quoidbach & Hansenne, 2009).

In *Organizational Culture and Leadership*, Schein (2010) created a clear delineation between leadership and culture. He stated the following:

> What we end up calling a culture in such systems is usually the result of the embedding of what a founder or leader has imposed on a group that has worked out. In this sense, culture is ultimately created, embedded, evolved, and ultimately manipulated by leaders. (Schein, 2010, p. 3)

This would indicate the influential nature of leadership has the propensity to drive the work engagement of their team. Barsade (2002) suggested the fact that people who work together experience collective emotions may also be applied to work engagement (Torrente, Salanova, Llorens, & Schaufeli, 2012).

**Gaps in the Literature**

Given the rate of technological advancement in recent decades, inaugural experimental literature on virtual teams provides little reason to be positive about the evolved human capital model. This condition, accompanied by the strong resistance toward the adoption of virtual work environments, highlights the antiquated nature of the literature and warrants contemporary exploration.

> Our global connectivity is growing dramatically, which is creating new ways to organize ourselves. Think of a leader not just as an individual but as a node on many different networks. The best leaders will not be isolated; they will be ravenous networkers with active links all around the world. (Johansen, 2009, p. 13)
It is important for practitioners as well as researchers to understand the nuances and distinctions in driving performance and engagement in virtual environments. With generations entering the workforce who were cultivated and educated in a world of technology, it is imperative that organizations and leaders modernize and elevate processes and expectations to continue to drive positive work engagement. Research indicates that millennials orient toward organizations that complement the generations’ convention and allow flexibility and virtualness. Providing prolific research on the attributes of virtualness is vital, as is research on the nature of leading in non-traditional co-located environments, given the influence of leadership on the effectiveness and engagement of work teams. This study attempted to do just that. Chapter 3 outlines the methodology used within this research to correlate the influence of a leader’s emotional intelligence on the work engagement of virtual team members.
Chapter 3: Methodology

Introduction
The research question and purpose of this study was designed to examine the relationship between the leaders’ emotional intelligence and the work engagement of virtual team members, utilizing cross-sectional survey design to quantify the two variables. Creswell (2009) indicated that survey design allows inferences to be made about a characteristic of a sample population. Past studies of co-located teams in various industries, such as information technology, policing, and food service, have found a correlation to exist between the emotional intelligence of the leader and the work engagement of team members (Brunetto, Teo, Shacklock, & Farr-Wharton, 2012; Ravichandran, Arasu, & Kumar, 2011; Sy, Tram, & O’Hara, 2006). This study sought to establish whether similar correlations exist in virtual environments. This chapter will review the research design, define hypotheses, identify challenges, outline the population and sample, examine the research instruments, provide procedures for data collection and analysis, and review strategies for validating findings, discuss limitations, and outline ethical assurances.

Research Design
This quantitative study utilized Pearson’s $r$ correlation with further linear regression analysis to test the relationship between a leader’s emotional intelligence and the work engagement of virtual team members. Existing assessment instruments were employed to determine the work engagement of team members as well as the overall
emotional intelligence of the leader of aforementioned team members. Using a post-positive perspective, the ability model of emotional intelligence theory was the foundational theory tested to determine the impact on the engagement of virtual team members. Seven years after their seminal definition of emotional intelligence, Mayer and Salovey evolved their approach to EI, in partnership with Caruso, creating an extensive measurement tool, MSCEIT, designed to cognitively evaluate an individual’s astuteness in the four defined abilities (Mayer, Salovey, & Caruso, 2002). This instrument is further explained within the data collection section of this chapter. The dependent variable of work engagement was measured utilizing UWES (Schaufeli & Bakker, 2004), which is also explained further in the data collection section.

**Hypotheses**

The overall purpose of this study focused on the impact that leaders’ emotional intelligence has on the work engagement of virtual team members. Two research questions were explored during this study:

- **R1**: What is the relationship between a virtual leader’s emotional intelligence score and the overall work engagement of their virtual workforce as measured by the MSCEIT and UWES?

- **H1**: High emotional intelligence in a leader results in a positive correlation with the overall work engagement of virtual team members.
• R2: What is the relationship between virtual leaders’ emotional intelligence and the individual elements (vigor, dedication, and absorption) of work engagement for their virtual team members as measured by UWES?

• *H2: High emotional intelligence in a leader results in a positive correlation with the vigor of virtual team members.*

• *H3: High emotional intelligence in a leader results in a positive correlation with the dedication of virtual team members.*

• *H4: High emotional intelligence in a leader results in a positive correlation with the absorption of virtual team members.*

**Challenges**

As a result of the relatively limited team sizes of virtual workgroups across corporations and in an effort to mitigate variables, such as, industry and cultural differences, one organization was selected as the subject group. Despite the precaution to mitigate variables, the results of the study experienced limitations due to the length of time involved to complete the study, the number of individuals who opted to participate in the study, the organizational restructuring (including acquisitions and departmental transitions), and the relatively small population size overall. An extenuating challenge within the sampled organization emerged as a result of one group being acquired from a small firm, integrating operations and workforce shortly before assessing engagement of workforce. The timing of the acquisition could have potentially influenced engagement results for the impacted
group. This particular group was analyzed separately by the researcher to determine data validity prior to incorporating in the overall results.

**Setting and Participants**

For this quantitative study, the setting proposed was a mid-size medical consulting organization specializing in non-acute healthcare. This organization defines itself as entirely virtual, comprised of five different business units with a total of 177 employees, of which 38 hold various leadership roles and responsibilities. Given the size of the organization, the entire workforce was invited to participate in the study. Seventy-three percent (73.4%) of the employee population completed the UWES, while 68.4% of the leaders participated in the MSCEIT assessment. According to survey companies such as Survey Gizmo and Survey Lab, this is considered a high participation rate. Table 1 summarizes participation by department.

<table>
<thead>
<tr>
<th>Department</th>
<th># of leaders</th>
<th># of employees</th>
<th># UWES participation</th>
<th>% of participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advisory &amp; Consulting</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>100.0%</td>
</tr>
<tr>
<td>Coding Services</td>
<td>16</td>
<td>87</td>
<td>76</td>
<td>73.8%</td>
</tr>
<tr>
<td>Revenue Management</td>
<td>7</td>
<td>27</td>
<td>29</td>
<td>85.3%</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>50.0%</td>
</tr>
<tr>
<td>Support Services</td>
<td>11*</td>
<td>15</td>
<td>15</td>
<td>57.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>38</td>
<td>139</td>
<td>130</td>
<td>73.4%</td>
</tr>
</tbody>
</table>

*Includes CEO and Executive team members
Coding services is the largest department within the organization, accounting for roughly 62% of the overall employees and 42% of leadership. Demographic data was collected on all participants, in addition to measurement of emotional intelligence utilizing the MSCEIT for leader participants and UWES for employee participants. The UWES was recreated in a digital format using Google forms to easily capture team member engagement. The survey was available to all 177 employees to anonymously participate regardless of title.

The selected organization had a basic understanding of emotional intelligence (EI) as defined by the mixed model theory of Goleman et al. (2002). The CEO of the organization was highly aware of emotional intelligence and commissioned six online EI modules for personal development. These modules were offered to the workforce through the company’s learning management system and were assigned to employees as suggested training. These modules provided a brief overview of what emotional intelligence is, in addition to quick videos highlighting the components of the mixed model theory of Goleman et al. (2002). As the researcher, I am unaware what percentage of employees completed the modules; however, during limited interactions with the leadership team, a small percentage of leaders expressed a knowledge of emotional intelligence. Prior assessment opportunities for leaders within the organization had not been provided preceding this research. In relation to work engagement measurements, the sample organization had expressed interest in
administering engagement surveys previously; however, a measurement strategy was not employed prior to this study.

**Data Collection Procedures**

An internal company email (Appendix A), constructed by the researcher, was sent to all employees by the sample organization’s human resource manager explaining the research, requesting employee participation, and directing employees to www.virtualeiresearch.com, a website created by the researcher specifically to collect data for this study. Participants were informed in the communication and within the electronic consent form on the website of the precautions taken to protect information collected as well as the anonymity of the respondents. The researcher removed personal identifying information by assigning a distinct identifier in the data collected, which was only viewed and used by the researcher for correlational purposes.

In an effort to increase participation, a follow up email (Appendix B) was sent by the human resource manager one week after the original email. Once the work engagement survey was closed, leaders were requested via email (Appendix C) to participate in the MSCEIT assessment and were given a two-week window to participate. Due to the demands of the business, this timeline was extended to ensure as much participation as possible. Follow up emails were sent by the human resource manager and researcher to provide ample opportunity for leaders to participate. Upon completion of the emotional intelligence assessment, leaders were given the option to
participate in a review session of their individual MSCEIT results with the researcher, who is a certified MSCEIT assessor through Multi-Health Systems.

Creswell (2009) highlighted survey designs that provide a quantitative portrayal of trends, attitudes, and opinions in experimental research. Two viable and reliable assessments were used for measurement—MSCEIT and UWES. Additionally, all participants completed a demographic survey to classify basic elements of the participant population, including gender, age, department, and tenure. The independent variable (emotional intelligence level of leaders) was measured utilizing the MSCEIT. The EI assessment for leaders took approximately 45 minutes to complete. The researcher is MSCEIT certified through Multi-Health Systems (MHS), the owner of the MSCEIT rights. All raw scores, including subscale scores and total EI scores, were provided via MHS generated resource report per participant. The dependent variable (work engagement of team members) was measured utilizing UWES and assessed online utilizing Google forms. Data collection was administered via a secured website (www.virtualeiresearch.com) dedicated to the collection of the research data with results accessible only by the researcher. The results for each instrument were combined into an Excel spreadsheet by the researcher and uploaded into the Statistical Package for the Social Sciences (SPSS) for further analysis. Work engagement data was analyzed at an aggregate level using the mean engagement score per leader to safeguard suggestive identifiers of individuals.
Emotional Intelligence

According to the Consortium for Research on Emotional Intelligence in Organizations (n.d.), there are nine distinct emotional intelligence measurements, of which, eight employ self-rated or multi-rater methods. The MSCEIT is currently the lone performance-based emotional intelligence test rooted in the psychometric body of social science. The MSCEIT instrument was selected to quantify the emotional intelligence in this study for two reasons. First, the MSCEIT was specifically designed to measure the ability model theory defined by Mayer, Salovey, and Caruso (2004), which is the primary theory being tested within this study. Designed as an intelligence test, the MSCEIT measures actual performance versus multi-rater or self-report measurement, minimizing potential misleading results. Second, the MSCEIT has undergone extensive reliability and validity testing of the instrument, making it considered the most widely accepted model by the academic community (Major, 2016; Sadri, 2012). Subsequently, researchers have found that many self-report measures overlap with existing scales of personality, whereby the MSCEIT has sufficient distinction from the Big Five personality tests (Mayer et al., 2004).

Comprised of 141 items, the MSCEIT, unlike other emotional intelligence assessments, has what the assessment creator considers “correct” answers based on two distinct scoring keys generated from general consensus scoring, comprised of over 5,000 test takers, as well as expert scoring derived from the judgments of 21 international emotions researchers (Mayer et al., 2004). It is incumbent upon the
assessor to choose the scoring option of preference when administering the test. While the assessment manual and targeted articles suggested that the general consensus scoring is the preferred method, recent communication with Caruso (personal communication, 2017) yielded advocacy for the expert scoring key, given that more recent analysis of version 2 demonstrated higher correlation between the two scoring keys at the total, area, and ability levels (.90 and higher versus .88 in version 1). Based on this suggestion, the expert scoring key was employed for this study.

The MSCEIT yields a total score, two area scores, four ability scores, and eight distinct task scores (two to measure each of the four abilities within the model) (Mayer et al., 2004). Given the lower reliability in the individual task scores, these were excluded from interpretation.

![Diagram of MSCEIT hierarchy]

Source: Adapted from Mayer, Salovey, & Caruso, 2002

Figure 1 denotes the structure of the instrument hierarchy.
The experiential area is comprised of the first two abilities of the model. Ability 1 (perceive emotions) assesses the ability to accurately identify one’s own and other’s emotions through perceiving emotions in facial and postural expressions. Individuals were asked to indicate how likely each emotion listed is present in a photograph. This is the most universal ability within the model and is considered to be a foundational attribute of emotional intelligence. If one misperceives emotions, the ability to use, understand, and manage those emotions are employed using misperceived information. Ability 2 (use emotions) focuses on one’s ability to use emotions to facilitate thought and problem solve. This is considered the least cognitive ability as it is not always able to be replicated. This ability is a passive process in which the way
one feels influences what one pays attention to and how one thinks, although part of intelligence relies on developing a knowledge base of experience upon which to draw (Mayer et al., 2004). This ability is measured using facilitation and sensation tasks by matching feelings to situations.

The second area of the MSCEIT is the strategic EI, which is derived from the final two abilities. Ability 3 (understand emotions) is considered the most cognitive ability as it reflects the capacity to define, analyze, predict, and understand the complexity of emotions. The tasks associated with this ability include defining complex emotion (blends) as well as determining progressions of emotion (changes) derived from emotions theory. The final ability (managing emotions) focuses on the ability to manage emotions oneself and of others. Mayer et al. (2004) denotes that emotions are managed in the context of an individual’s goals, self-knowledge, and social awareness. This ability is not about suppressing emotions or acting unemotionally. This section was measured using vignettes and multiple choice options.

Standard scores from MSCEIT parallel those used in the Wechsler scales, whereby the average score is 100 with a standard deviation of 15. The majority of testers (68%) score between 85 and 115, with total scores ranging from 55 to 145. A scatter score is provided to indicate the variability of the test takers’ performance. High scatter scores indicate strong variability and may require additional analysis of results.
Work Engagement

An extensive literature review of work engagement uncovered UWES as the most utilized and validated instrument in literature to date. Work engagement is comprised of three dimensions (vigor, dedication, and absorption), which UWES distinctively measures (Schaufeli & Bakker, 2004).

Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one’s work, and persistence even in the face of difficulties. Dedication refers to being strongly involved in one’s work, and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption is characterized by being fully concentrated and happily engrossed in one’s work, whereby time passes quickly and one has difficulties with detaching oneself from work. (Bakker & Leiter, 2010, p. 13)

Developed in 1999 at Utrecht University in the Netherlands, two versions of the survey exist—the original 17-item scale and a shortened 9-item scale. While the psychometric testing of the UWES is still in progress, Seppälä et al. (2009) conducted a validity study of the instrument through structural equation modeling to find a high rank-order stability for the work engagement factors (.82 and .86). This instrument has been utilized cross-nationally within a variety of professions. While no research was found indicating use in the virtual environment, it would appear a viable instrument given the viability cross-culturally. Therefore, the 17-item scale (Appendix G) was selected for the dependent variable of this proposed study.
UWES is a self-report questionnaire, and the 17 items measuring the three aforementioned dimensions of work engagement are categorized as follows and outlined in Table 2.

Vigor is measured by six items (1, 4, 8, 12, 15, 17); dedication by five (2, 5, 7, 10, 13); and absorption by six (3, 6, 9, 11, 14, 16). Items are rated on a seven-point scale ranging from 0 (never) to 6 (every day). The internal consistencies (Cronbach’s alpha) of the UWES-17 ranged between 0.75 and 0.83 for vigor, between 0.86 and 0.90 for dedication, and between 0.82 and 0.88 for absorption. (Seppälä et al., 2009, p. 467)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigor</td>
<td>At my work, I feel bursting with energy</td>
</tr>
<tr>
<td></td>
<td>4. At my job, I feel strong and vigorous</td>
</tr>
<tr>
<td></td>
<td>8. When I get up in the morning, I feel like going to work</td>
</tr>
<tr>
<td></td>
<td>12. I can continue working for very long periods at a time</td>
</tr>
<tr>
<td></td>
<td>15. At my job, I am very resilient, mentally</td>
</tr>
<tr>
<td></td>
<td>17. At my work I always persevere, even when things do not go well</td>
</tr>
<tr>
<td>Dedication</td>
<td>I find the work that I do full of meaning and purpose</td>
</tr>
<tr>
<td></td>
<td>5. I am enthusiastic about my job</td>
</tr>
<tr>
<td></td>
<td>7. My job inspires me</td>
</tr>
<tr>
<td></td>
<td>10. I am proud of the work that I do</td>
</tr>
<tr>
<td></td>
<td>13. To me, my job is challenging</td>
</tr>
<tr>
<td>Absorption</td>
<td>Time flies when I’m working</td>
</tr>
<tr>
<td></td>
<td>6. When I am working, I forget everything else around me</td>
</tr>
<tr>
<td></td>
<td>9. I feel happy when I am working intensely</td>
</tr>
<tr>
<td></td>
<td>11. I am immersed in my work</td>
</tr>
<tr>
<td></td>
<td>14. I get carried away when I’m working</td>
</tr>
<tr>
<td></td>
<td>16. It is difficult to detach myself from my job</td>
</tr>
</tbody>
</table>

*Source:* Adapted from Schaufeli & Bakker, 2004
In 2003, an explorative factor analyses was conducted, which led to the recommendation to use the total-score on the UWES for measurement. (Schaufeli & Bakker, 2004). The higher the total-score, the stronger the work engagement.

While this instrument is well tested, validated, and reliable as a measurement of work engagement, it is not as complex as the MSCEIT (Mayer et. al, 2003) instrument employed for the independent variable in the study. Comparatively, the MSCEIT (Mayer, Salovey, Caruso, & Sitarenios, 2003) consists of 141 questions categorizing two areas, four abilities, and eight tasks versus 17 questions in the UWES (Schaufeli & Bakker, 2004) for three components cumulating into one total-score. This research utilized both instruments’ total-score for the numeric value for each participant. Additionally, the research analyzed the MSCEIT area (experiential and strategic) and ability (perceive, use, understand, and manage) scores in correlation to the three dimensions of the UWES (vigor, dedication, and absorption).

**Data Analysis**

A correlational study measures the strength of relationship, either positive or negative, between two variables. Singleton and Straits (2010) cited the following:

[A] positive or direct relationship between variables exists if the two variables consistently change in the same direction. A common statistical measure of the strength and direction of linear relationships between two quantitative variables in the Pearson product-moment coefficient or correlation. (p. 91)
The resulting data from the instruments detailed above were analyzed utilizing a one-tail Pearson’s \( r \) correlation test to determine the positive relationship between the two defined variables as indicated in the procedures section and further analyzed with linear regression analysis to control for demographic data. Statistically significant associations are considered not likely to occur by chance. The level of significance was set at 0.05 for this study, which is the standard. SPSS for Windows version 24 (IBM, 2017; Holcomb, 2017) was utilized to analyze the data.

**Strategies for Validating Findings**

As outlined above, both instruments suggested have extensive use in academic research and have been deemed valid and reliable methods. Drawing correct inferences from the data was vital.

**Ethical Assurances**

The researcher had no previous relations to the organization being sampled, limiting the preconceived view of the company and its members, which has a propensity to decrease potential bias of outcomes. Limited personal data was captured in the collection; however, precautions were taken to secure all information gathered. The data was password protected and only accessible by the researcher. Participants were made aware of the intentions of the research, including how the samples would be used. Institutional Review Board (IRB) approval was obtained and subsequent standards followed within this study.
Chapter 4: Findings

Introduction
The purpose of this study was to understand the relationship between the emotional intelligence of virtual team leaders and the level of work engagement exhibited by their virtual team members. Specifically, the study examined what effect, if any, a leader’s emotional intelligence asserts on the work engagement of their virtual team members via the following research questions:

- **R1:** What is the relationship between a virtual leader’s emotional intelligence score and the overall work engagement of their virtual workforce as measured by the MSCEIT and UWES?
  
  - **H1:** High emotional intelligence in a leader results in a positive correlation with the overall work engagement of virtual team members.

- **R2:** What is the relationship between virtual leaders’ emotional intelligence and the individual elements (vigor, dedication, and absorption) of work engagement for their virtual team members as measured by UWES?
  
  - **H2:** High emotional intelligence in a leader results in a positive correlation with the vigor of virtual team members.
  
  - **H3:** High emotional intelligence in a leader results in a positive correlation with the dedication of virtual team members.
  
  - **H4:** High emotional intelligence in a leader results in a positive correlation with the absorption of virtual team members.
As described in Chapter 3, an existing commercially available assessment instrument, Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), was employed to measure the EI ability of team leaders (independent variable). Likewise, Utrecht’s Work Engagement Scale (UWES), which focuses on vigor, dedication, and absorption, was employed to assess the work engagement of virtual team members (dependent variable).

This chapter presents the findings of the research conducted. The first section contains information about the study setting and sampling procedures. The second section outlines the statistical findings of the quantitative data, providing demographics and statistical descriptions. The third and final section summarizes the statistical comparative analysis of the research variables, assessing the hypothesized research questions.

**Study Setting and Sampling Procedure**

The setting of the study was a mid-size organization specializing in non-acute healthcare consulting services. The organization operated entirely in a virtual environment in that the team leaders and individual workers were located in separated locations within the United States. The organization was comprised of 177 employees organized in five different business units as outlined in Table 1. Of the 177 employees, 38 held various leadership roles and responsibilities with varying direct reports. Given the size of the organization and in an effort to attain the most valid and reliable measurement, the entire workforce was requested to participate in the study.
on a volunteer basis. Accordingly, assessments were administered to 26 team leaders to determine EI ability, and 130 team members participated in the work engagement survey, representing a participation rate of 73.4% overall employee population and 68.4% of the leadership population respectively. Seven team leaders declined to participate in the EI ability assessment, thus for the purposes of the study, team members’ engagement scores for those leaders were excluded, resulting in a sample size of 26 leaders and 107 team members.

**Demographics**

Demographics regarding gender, age, department, and time in current position were collected. Few respondents excluded the demographic data; however, when those components were null, the full respondent data was removed as appropriate within the analysis of those variables.

The gender of the leader respondents was heavily skewed female (see Table 3. Sample Characteristics: Gender). Of those who indicated gender, female respondents comprised 73% of the leader sample while 23% indicated male as their gender. Similarly, team member gender demographics mirrored leader gender demographics with 86% identifying as female.
Table 3. Sample Characteristics: Gender

<table>
<thead>
<tr>
<th>Participant</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader (N=25)</td>
<td>6 (23.1%)</td>
<td>19 (73.1%)</td>
<td>25 (96.2%)</td>
</tr>
<tr>
<td>Team (N=107)</td>
<td>14 (13%)</td>
<td>93 (86.1%)</td>
<td>107 (100%)</td>
</tr>
</tbody>
</table>

*Note: One gender value was null within the leader group.*

The ages in leadership outlined in Table 4. Sample Characteristics: Age) ranged from 25 to 60 years, with 57.7% of leaders over the age of 40. The majority of the team members, 39.8%, also categorized their age in the 50+ category with 66.7% of the population being 40 years of age or older.

Table 4. Sample Characteristics: Age

<table>
<thead>
<tr>
<th></th>
<th>20-29 (7.7%)</th>
<th>30-39 (26.9%)</th>
<th>40-49 (26.9%)</th>
<th>50+ (30.8%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader (N=24)</td>
<td>2</td>
<td>7</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Team (N=107)</td>
<td>7 (6.5%)</td>
<td>28 (25.9%)</td>
<td>29 (26.9%)</td>
<td>43 (39.8%)</td>
</tr>
</tbody>
</table>

*Note: Two leader age values were null.*

The largest representation of team members categorized themselves in the one-to-three years of service category, representing 47.7% of the total participants (see Table 5. Sample Characteristics: Tenure/Length of Service).
Table 5. Sample Characteristics: Tenure/Length of Service

<table>
<thead>
<tr>
<th>Tenure/Length of Service</th>
<th>Frequency</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 6 months</td>
<td>16</td>
<td>14.9</td>
</tr>
<tr>
<td>6 months to a year</td>
<td>9</td>
<td>8.4</td>
</tr>
<tr>
<td>1-3 years</td>
<td>51</td>
<td>47.7</td>
</tr>
<tr>
<td>3-6 years</td>
<td>16</td>
<td>15.0</td>
</tr>
<tr>
<td>6-9 years</td>
<td>7</td>
<td>6.5</td>
</tr>
<tr>
<td>9-12 years</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Over 12 years</td>
<td>5</td>
<td>4.7</td>
</tr>
<tr>
<td>Total (N=107)</td>
<td>107</td>
<td>100.0</td>
</tr>
</tbody>
</table>

According to the U.S. Bureau of Labor Statistics (2016), this is slightly below average based on the median tenure of 4.2 years, although this has trended downward nationally since 2014.

Team leaders varied in the number of employees assigned to their area of supervision, ranging from one to 20 employees supervised with an average team size of 4.12. Table 6 outlines the number of team members assigned to each team leader.
Table 6. Sample Characteristics: Team Size

<table>
<thead>
<tr>
<th>Leader</th>
<th># of Team Members</th>
<th>% of Total Team Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader 1</td>
<td>6</td>
<td>5.6</td>
</tr>
<tr>
<td>Leader 2</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Leader 3</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Leader 4</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Leader 5</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Leader 6</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Leader 7</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Leader 8</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Leader 9</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Leader 10</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Leader 11</td>
<td>6</td>
<td>5.6</td>
</tr>
<tr>
<td>Leader 12</td>
<td>8</td>
<td>7.5</td>
</tr>
<tr>
<td>Leader 13</td>
<td>10</td>
<td>9.3</td>
</tr>
<tr>
<td>Leader 14</td>
<td>20</td>
<td>18.9</td>
</tr>
<tr>
<td>Leader 15</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Leader 16</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Leader 17</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Leader 18</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>Leader 19</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>Leader 20</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>Leader 21</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Leader 22</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Leader 23</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Leader 24</td>
<td>5</td>
<td>4.7</td>
</tr>
<tr>
<td>Leader 25</td>
<td>5</td>
<td>4.7</td>
</tr>
<tr>
<td>Leader 26</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>Total</td>
<td>107</td>
<td>100.0</td>
</tr>
</tbody>
</table>
**Data Collection**

A majority of leaders within the organization, 68%, participated in the study. All leaders were eligible and encouraged to participate but were not required. Leaders were invited to participate via email (Appendix C) and were initially provided two weeks to complete the MSCEIT survey; however, this was extended due to leadership schedules and business demands. Weekly email reminders were sent to the leaders requesting participation. Once the leader signed the electronic informed consent form (Appendix D), they were directed to a MSCEIT link, which included a password to complete the survey via Multi-Health Systems site. Upon completion of the assessment, leaders were provided an hour feedback session with the researcher, a certified MSCEIT assessor, regarding their individual assessment results if they were interested in learning the details of their personal score. Seventeen of the 26 participants (65%) engaged in individual sessions for their personal learning and development of emotional intelligence.
Independent variable MSCEIT

As discussed in Chapter 3, the MSCEIT instrument is comprised of four levels of scoring, as identified in

Source: Adapted from Mayer, Salovey, & Caruso, 2002

Figure 1, inclusive of the total score, the two area scores, four ability scores, and eight task scores. For the purposes of this study, the analysis did not focus on the tasks scores due to the lower reliability and recommendation by the assessment creators to not use the task level within analysis (Mayer et al., 2003).

MSCEIT scores fall within five levels of performance (improve, consider developing, competent, skilled, and expert). Figure 2 outlines the total general population of individuals who have taken the MSCEIT and the ratio within each of the five levels of performance.
The organization studied followed a similar bell curve in the overall categorization of results; however, the curve skewed left with higher percentages of the sample falling in the areas of consider development and competent with no individuals representing the expert range. Figure 3 represents the sample studied with 3.8% categorized as improve, 50% categorized as consider development, 42.4% categorized as competent, 3.8% categorized as skilled, and 0% scoring within the expert range.

Source: Adapted from Mayer, Salovey, & Caruso, 2002

Figure 2. MSCEIT General Population Standard Scores
Figure 3. Sample Organization MSCEIT Performance Categorization

The individual leader EI ability scores and categorization are detailed in the Table 7 below. The area scores have not been included in the table due to the high correlation between the MSCEIT total score and the two area scores (experiential and strategic).

**Table 7. Team Leader EI Scores**

<table>
<thead>
<tr>
<th>Leader</th>
<th>MSCEIT Total</th>
<th>Perceive</th>
<th>Use</th>
<th>Understand</th>
<th>Manage</th>
<th>Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader 1</td>
<td>111</td>
<td>102</td>
<td>96</td>
<td>118</td>
<td>108</td>
<td>Skilled</td>
</tr>
<tr>
<td>Leader 2</td>
<td>99</td>
<td>80</td>
<td>114</td>
<td>115</td>
<td>109</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 3</td>
<td>102</td>
<td>105</td>
<td>91</td>
<td>94</td>
<td>114</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 4</td>
<td>101</td>
<td>110</td>
<td>105</td>
<td>81</td>
<td>111</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 5</td>
<td>106</td>
<td>110</td>
<td>90</td>
<td>104</td>
<td>102</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 6</td>
<td>93</td>
<td>93</td>
<td>80</td>
<td>106</td>
<td>100</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 7</td>
<td>103</td>
<td>92</td>
<td>101</td>
<td>110</td>
<td>108</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader</td>
<td>MSCEIT Total</td>
<td>Perceive</td>
<td>Use</td>
<td>Understand</td>
<td>Manage</td>
<td>Performance Level</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>----------</td>
<td>-----</td>
<td>------------</td>
<td>--------</td>
<td>------------------</td>
</tr>
<tr>
<td>Leader 8</td>
<td>105</td>
<td>109</td>
<td>120</td>
<td>83</td>
<td>123</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 9</td>
<td>95</td>
<td>104</td>
<td>77</td>
<td>97</td>
<td>102</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 10</td>
<td>96</td>
<td>85</td>
<td>96</td>
<td>103</td>
<td>123</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 11</td>
<td>97</td>
<td>91</td>
<td>107</td>
<td>92</td>
<td>112</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 12</td>
<td>109</td>
<td>117</td>
<td>105</td>
<td>96</td>
<td>104</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 13</td>
<td>99</td>
<td>80</td>
<td>118</td>
<td>130</td>
<td>97</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 14</td>
<td>94</td>
<td>110</td>
<td>120</td>
<td>79</td>
<td>90</td>
<td>Competent</td>
</tr>
<tr>
<td>Leader 15</td>
<td>86</td>
<td>82</td>
<td>98</td>
<td>83</td>
<td>122</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 16</td>
<td>88</td>
<td>81</td>
<td>101</td>
<td>97</td>
<td>100</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 17</td>
<td>73</td>
<td>84</td>
<td>86</td>
<td>79</td>
<td>73</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 18</td>
<td>80</td>
<td>82</td>
<td>84</td>
<td>82</td>
<td>104</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 19</td>
<td>75</td>
<td>76</td>
<td>73</td>
<td>103</td>
<td>81</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 20</td>
<td>78</td>
<td>61</td>
<td>74</td>
<td>100</td>
<td>146</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 21</td>
<td>81</td>
<td>76</td>
<td>80</td>
<td>104</td>
<td>92</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 22</td>
<td>88</td>
<td>84</td>
<td>105</td>
<td>89</td>
<td>102</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 23</td>
<td>85</td>
<td>123</td>
<td>100</td>
<td>77</td>
<td>71</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 24</td>
<td>88</td>
<td>97</td>
<td>74</td>
<td>94</td>
<td>100</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 25</td>
<td>80</td>
<td>87</td>
<td>73</td>
<td>87</td>
<td>96</td>
<td>Consider Developing</td>
</tr>
<tr>
<td>Leader 26</td>
<td>69</td>
<td>74</td>
<td>115</td>
<td>73</td>
<td>72</td>
<td>Improve</td>
</tr>
</tbody>
</table>

MSCEIT total score was highly correlated to both the experiential and strategic areas of the assessment tool; however, the individual area scores were not correlated with
one another. Further analysis was conducted to determine the correlation among the abilities level. It was determined the abilities perceive and use are correlated with the associated experiential area, as would be expected; however, they are not correlated with each other. Similarly, manage and understand abilities are correlated with the strategic area of EI, although they are not correlated to one another.

Table 8 outlines the descriptive statistics for the MSCEIT results. The mean score for team leaders in each of the four abilities were 92.12 in the perceiving ability, 95.50 in the using ability, 95.23 in the understanding ability, and 102.38 in managing the ability.
Table 8. Descriptive Statistics: MSCEIT

<table>
<thead>
<tr>
<th>(N=26)</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Skewness Statistics</th>
<th>Kurtosis Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSCEIT Total</td>
<td>69</td>
<td>111</td>
<td>91.58</td>
<td>11.632</td>
<td>-.199</td>
<td>-.911</td>
</tr>
<tr>
<td>Experiential</td>
<td>63</td>
<td>117</td>
<td>92.00</td>
<td>14.870</td>
<td>.263</td>
<td>-.513</td>
</tr>
<tr>
<td>Strategic</td>
<td>70</td>
<td>118</td>
<td>96.69</td>
<td>13.523</td>
<td>-.299</td>
<td>-.256</td>
</tr>
<tr>
<td>Perceive</td>
<td>61</td>
<td>123</td>
<td>92.12</td>
<td>15.355</td>
<td>.224</td>
<td>-.642</td>
</tr>
<tr>
<td>Use</td>
<td>73</td>
<td>120</td>
<td>95.50</td>
<td>15.430</td>
<td>.000</td>
<td>-1.169</td>
</tr>
<tr>
<td>Understand</td>
<td>73</td>
<td>130</td>
<td>95.23</td>
<td>14.009</td>
<td>.522</td>
<td>.010</td>
</tr>
<tr>
<td>Manage</td>
<td>71</td>
<td>146</td>
<td>102.38</td>
<td>16.886</td>
<td>.128</td>
<td>.970</td>
</tr>
</tbody>
</table>
The MSCEIT data is considered moderately skewed left (-.199), as previously illustrated in Figure 3. The Kurtosis of the MSCEIT data would suggest platykurtic distributions (see Figure 4. Histogram Emotional Intelligence), which have fewer extreme values than predicted by the normal distribution (Platykurtic, n.d.).

![Histogram Emotional Intelligence](image)

**Figure 4. Histogram Emotional Intelligence**

**Dependent variable UWES**

UWES measures work engagement of employees across three dimensions. All employees were invited to participate in the work engagement survey via email (Appendix A) with a follow up email provided a week before survey close (Appendix B). Through a series of 17 survey questions (Appendix G), respondents identified their level of engagement per question to determine overall vigor, dedication, and absorption in their individual role. Team members voluntarily completed an electronic consent form (Appendix D) and were then directed to anonymously...
complete the survey within their work environment. Team members manually identified their leader within the survey to provide the ability to link results with the leaders’ MSCEIT scores.

In testing the UWES instrument with the sample data, the total UWES and the three dimensions of vigor, dedication, and absorption were all highly correlated and yielded a high reliability of .913 Cronbach’s alpha.

The descriptive statistics for the dependent variable are provided in Table 9. The mean UWES score across teams was 4.68 on a scale of 6.
Table 9. Descriptive Statistics: UWES

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness Statistics</th>
<th>Kurtosis Statistics</th>
<th>Std. Error</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total UWES</td>
<td>3</td>
<td>6</td>
<td>4.68</td>
<td>.543</td>
<td>-1.267</td>
<td>3.036</td>
<td>.456</td>
<td>.887</td>
</tr>
<tr>
<td>Vigor</td>
<td>3</td>
<td>6</td>
<td>4.74</td>
<td>.632</td>
<td>-.455</td>
<td>.985</td>
<td>.456</td>
<td>.887</td>
</tr>
<tr>
<td>Dedication</td>
<td>3</td>
<td>6</td>
<td>4.94</td>
<td>.530</td>
<td>-1.400</td>
<td>3.525</td>
<td>.456</td>
<td>.887</td>
</tr>
<tr>
<td>Absorption</td>
<td>3</td>
<td>6</td>
<td>4.52</td>
<td>.643</td>
<td>-.921</td>
<td>1.730</td>
<td>.456</td>
<td>.887</td>
</tr>
</tbody>
</table>
There was not a significant variability in responses, and the sample was found to have a strong positive bias. The highest scoring question was, “I am proud of the work I do,” which averaged 5.34 and is an attribute of dedication. The lowest scoring question was, “It is difficult to detach myself from my job,” which had an average score of 3.79 among respondents and is an attribute of absorption.

It can be determined that the UWES data is considered moderately skewed (-1.267) as discussed previously in this chapter; however, the Kurtosis indicates a normal distribution (3.036) as presented in Figure 5.

![Figure 5. Histogram for Work Engagement](image)
Quantitative Data Analysis
This section presents the data and statistical analysis comparing the EI ability of team leaders to the work engagement levels of virtual team members. The MSCEIT assessment generated EI ability scores in the domains of perceive, use, understand, and manage emotions. The UWES survey produced scores for team members in areas of vigor, dedication, and absorption.

The study focused on the associations between these variables, MSCEIT as the independent variable and UWES as the dependent variable, with consideration of controlling for demographic variables highlighted under the demographics section of this chapter.

Statistical analysis of hypothesized research questions
The resulting data from the instruments detailed in Chapter 3 were analyzed utilizing a one-tail Pearson’s $r$ correlation to determine the degree of relationship between the defined variables, as indicated in the methodology section. Both individual level scores and aggregate level data were used, resulting in a significant correlation between the team leaders’ overall emotional intelligence score and team members’ work engagement score. Significant correlations were also found in two of the three subscales of work engagement, as outlined in Table 10. These findings will be discussed in the subsequent discussion chapter.
Table 10. Correlations

<table>
<thead>
<tr>
<th>(N=26)</th>
<th>UWES Total</th>
<th>Vigor</th>
<th>Dedication</th>
<th>Absorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSCEIT Total</td>
<td>.353*</td>
<td>.480**</td>
<td>.330*</td>
<td>.318</td>
</tr>
<tr>
<td>Experiential</td>
<td>.058</td>
<td>.098</td>
<td>.103</td>
<td>.080</td>
</tr>
<tr>
<td>Strategic</td>
<td>.438*</td>
<td>.536**</td>
<td>.387*</td>
<td>.341*</td>
</tr>
<tr>
<td>Perceive</td>
<td>.106</td>
<td>.187</td>
<td>.134</td>
<td>.131</td>
</tr>
<tr>
<td>Use</td>
<td>-.069</td>
<td>-.145</td>
<td>-.039</td>
<td>-.071</td>
</tr>
<tr>
<td>Understand</td>
<td>.447*</td>
<td>.504**</td>
<td>.425*</td>
<td>.394*</td>
</tr>
<tr>
<td>Manage</td>
<td>.115</td>
<td>.219</td>
<td>.065</td>
<td>.001</td>
</tr>
<tr>
<td>Team Size</td>
<td>.059</td>
<td>-.015</td>
<td>.068</td>
<td>.060</td>
</tr>
<tr>
<td>Tenure (N=107)</td>
<td>.103</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (1-tailed).
*Correlation is significant at the 0.05 level (1-tailed).

Tests of hypotheses

The following is the foundational research question within the study:

- R1: What is the relationship between a virtual leader’s emotional intelligence score and the overall work engagement of their virtual workforce as measured by the MSCEIT and UWES?

The following hypothesis was created to answer this foundational research question within the study.

- H1: High EI in a leader results in a positive correlation with the overall work engagement of virtual team members.
The initial analysis of research question one investigated the relationship between the virtual leaders’ total MSCEIT score and the work engagement of the virtual team members without consideration of other variables. Utilizing a one-tailed test to determine the positive effect, there was a significant correlation between the leaders’ emotional intelligence and overall work engagement of the virtual team members $(r(26) = .353, p=.038)$. Therefore, this hypothesis was supported.

The following is a second research question within the study:

- **R2:** What is the relationship between virtual leaders’ emotional intelligence abilities and the individual elements (vigor, dedication, and absorption) of work engagement for their virtual team members as measured by UWES?

In an effort to answer this research question, the following three hypotheses (bulleted) were created:

- **H2:** High emotional intelligence in a leader results in a positive correlation with the vigor of virtual team members.

It was determined the emotional intelligence of the leader had a significant correlation with the vigor of virtual team members $(r(26) = .480, p=.007)$ at the .01 level. Therefore, hypothesis two was supported. This was the most significantly correlated dimension of work engagement.

- **H3:** High emotional intelligence in a leader results in a positive correlation with the dedication of virtual team members.
This hypothesis was supported. The correlation between the emotional intelligence of the leader and the dedication dimension of work engagement of the virtual team members is significant ($r(26) = .330, p=.0499$).

- **H4: High emotional intelligence in a leader results in a positive correlation with the absorption of virtual team members.**

It was determined that this hypothesis was not supported. There was not a significant correlation between the emotional intelligence of the leader and the absorption dimension of work engagement of virtual team members ($r(26) = .318, p=.057$).

Table 11 provides an overview of the hypotheses tested and their correlation results.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Results</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>High emotional intelligence in a leader results in a positive correlation with the overall work engagement of virtual team members. ($r(26) = .353, p=.038$)</td>
<td>Yes</td>
</tr>
<tr>
<td>H2</td>
<td>High emotional intelligence in a leader results in a positive correlation with the vigor of virtual team members. ($r(26) = .480, p=.007$)</td>
<td>Yes</td>
</tr>
<tr>
<td>H3</td>
<td>High emotional intelligence in a leader results in a positive correlation with the dedication of virtual team members. ($r(26) = .330, p=.0499$)</td>
<td>Yes</td>
</tr>
<tr>
<td>H4</td>
<td>High emotional intelligence in a leader results in a positive correlation with the absorption of virtual team members. ($r(26) = .318, p=.057$)</td>
<td>No</td>
</tr>
</tbody>
</table>
Further analysis was conducted to investigate the relationship between the four abilities of emotional intelligence (perceive, use, understand, and manage) and the work engagement of the team members. Of the emotional intelligence abilities, understand was significantly correlated to work engagement ($r (26) = .447, p = .011$) at all dimensions (total UWES, vigor, dedication, and absorption), while the remaining three abilities—perceive ($r (26) = .106, p = .303$), use ($r (26) = -.069, p = .369$), and manage ($r (26) = .115, p = .288$)—were found to not be significant in relation to the virtual team members work engagement. Demographic attributes of team size and tenure when tested individually with work engagement were determined to not be significant contributors to the overall work engagement scores.

Regression analysis was conducted to control for demographic attributes, gender, age, and team size. In the model, I first controlled for team size to determine how emotional intelligence impacts work engagement above and beyond the size of the team. Table 12 below indicates there is not a significant relationship between emotional intelligence and work engagement after controlling for team size ($\beta=.369, p=.084$). This would indicate that team size has the propensity to influence how the emotional intelligence of a leader influences work engagement within the virtual environment.
Table 12. Coefficients Model 1

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Standard Coefficients</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Size</td>
<td>-.051</td>
<td>-2.52</td>
<td>.803</td>
</tr>
<tr>
<td>MSCEIT Total</td>
<td>.369</td>
<td>1.806</td>
<td>.084</td>
</tr>
</tbody>
</table>

a. Dependent Variable: UWES Average

Next, I controlled for gender to determine how emotional intelligence impacts work engagement above and beyond gender. Table 13 below indicates that there is not a significant relationship between emotional intelligence and work engagement after controlling for gender ($\beta=.320$, $p=.123$).

Table 13. Coefficients Model 2

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Standard Coefficients</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.154</td>
<td>.773</td>
<td>.448</td>
</tr>
<tr>
<td>MSCEIT Total</td>
<td>.320</td>
<td>1.606</td>
<td>.123</td>
</tr>
</tbody>
</table>

a. Dependent Variable: UWES Average

Lastly, I controlled for age to determine how emotional intelligence impacts work engagement above and beyond the age of respondents. Table 14 below indicates that there is not a significant relationship between emotional intelligence and work engagement after controlling for age ($\beta=.282$, $p=.175$).
Given that vigor was the most significantly correlated work engagement element, I was curious if the demographic elements would influence the relationship similarly using vigor as the dependent variable. This prompted me to conduct a regression analysis using the highest significantly correlated work engagement dimension of vigor, controlling for the demographic attributes of age, gender, and team size. I found that MSCEIT remained highly correlated with vigor after controlling for gender (β=.460, p=.021) and team size (β=.533, p=.009). Age continued to be an influencing factor, whereby MSCEIT was not significantly correlated (β=.360, p=.071) with the vigor dimension of work engagement after controlling for age. However, the EI area of strategic remained highly correlated with the vigor dimension of work engagement after controlling for age (β=.400, p=.047), although the understand ability was not significantly correlated with vigor after controlling for age (β=.343, p=.097).
Figure 6 illustrates the influencing components of the emotional intelligence of virtual leaders on the work engagement attributes of virtual team members discussed above.

![Figure 6. Correlational Attributes of Virtual Leaders’ Emotional Intelligence](image)

The analysis of the various attributes of emotional intelligence found that the strategic area of EI was significantly correlated with all dimensions of work engagement. This was primarily driven by the ability of understand within the EI framework, whereas no significant correlations were found with the manage ability or the experiential area of EI.

**Summary**

The analysis outlined in this chapter supported hypothesis one, two, and three, indicating that there is a significant correlation between virtual leaders’ emotional intelligence and the overall work engagement of virtual team members, specifically in the areas of vigor and dedication; however, after controlling for demographic variables (age, gender, and team size) the correlation decreased in significance between the primary variables. The strategic area of emotional intelligence remains
significantly correlated to the work engagement dimension vigor, even after controlling for demographic attributes. Chapter 5 will discuss the implications of these findings and how these results contribute to the broader body of literature for virtual teams, as well as, emotional intelligence and work engagement.
Chapter 5: Discussion

I began this study to understand if the correlations identified in previous studies (Brunetto et al., 2012; Ravichandran et al., 2011; Sy et al., 2006) between co-located leader’s emotional intelligence and positive work engagement within their teams translated to the virtual team environment. The data examined in this study suggests the impact of a leader’s emotional intelligence has the potential to translate to the virtual ecosystem. The specific findings and implications will be detailed within this chapter. The discussion begins with a review of the purpose of the study, the statement of the research problem, a review of the methodology employed, and an overview of results. The chapter will conclude with interpreting the data, discussing the results, and sharing the implications of the findings.

Statement of Problem

The purpose of this quantitative study was to examine the relationship of the emotional intelligence of a virtual leader on the overall work engagement of virtual team members within a mid-size medical consulting firm. As a virtual leader within a large telecommunications company, I was intrigued by my own virtual team’s positive work engagement compared to the lower work engagement scores of co-located counterparts. The emotional intelligence literature, my previous professional experience, and the precept that leadership is a process whereby an individual influences a group of individuals to achieve a common goal (Northouse, 2010) led to the development of a research hypothesis positing that a correlation exists between
leaders’ emotional intelligence and work engagement of team members in a virtual environment. This hypothesis was supported within the study.

**Methodology Review**

This quantitative study utilized a one-tail Pearson’s $r$ correlation with linear regression analysis to test the positive relationship between a virtual leader’s emotional intelligence and the work engagement of their virtual team members. Existing assessment instruments (MSCEIT and UWES) were employed to determine the work engagement of team members as well as the overall emotional intelligence of the leader of aforementioned team members. As outlined in Chapter 3, both instruments have extensive use in academic research and have been deemed valid and reliable assessment tools.

**Findings and Discussion of Results**

While emotional intelligence and work engagement are both considered relatively newer constructs developed in the 1990s, both have been found to be valuable philosophies within the business environment. Goleman (1996) posited that effective leaders possess emotional intelligence attributes and that emotional intelligence was twice as important as other job skills in delivering excellent performance. This concept contributed to the development of the initial research question:

- R1: What is the relationship between a virtual leader’s emotional intelligence score and the overall work engagement of their virtual workforce as measured by the MSCEIT and UWES?
Based upon the emotional intelligence literature, it would seem intuitive that high emotional intelligence scores of virtual team leaders would correlate positively to high work engagement scores of their virtual team members. This supposition was supported by the data collected within this study when analyzed independently, despite the fact that the emotional intelligence of the virtual leaders studied averaged a score of 90.8, which falls within the “consider development” categorization of the MSCEIT scale. Additionally, the sample mean falls below the general population mean of emotional intelligence. Conversely, the work engagement of the virtual team members averaged on the higher end of the Utrecht scale at 4.68. The data resulted in a significant correlation between the two variables when analyzed independent of other variables, thus supporting the first hypothesis.

- **H1: High emotional intelligence in a leader results in a positive correlation with the overall work engagement of virtual team members.**

A significant correlation was found between virtual leaders’ emotional intelligence and the overall work engagement of their virtual workforce as measured by the MSCEIT and UWES. These findings indicate that the emotional intelligence of leaders is a relevant skill even within the virtual ecosystem, furthering Ruggieri’s (2009) belief that existing leadership models can be extended to virtual teams, as well as the supposition of Gilson et al. (2015) that leaders continue to play an important role within the virtual environment. Emotions are part of the human essence and exist whether individuals are mindful of them or not. Therefore, it may even be theorized that the skill of emotional intelligence becomes more important for leaders in the
virtual environment due to the inability to perceive emotions through more visual means, such as facial expressions and body language, given the lack of face-to-face interaction between leaders and team members.

When accounting for controlled demographics (age, gender, and team size), the emotional intelligence of the leader did not have a significant correlation to overall work engagement of virtual team members. Even though the coefficients output remained within a similar range, the $p$ values increased beyond the .05 level of significance when controlling for the demographics. Although these findings may be attributed to the small sample size studied, previous research found that individuals over 40 and female respondents have a greater emotional intelligence ability than other respondents (Cabello, Sorrel, Fernández-Pinto, Extremera, & Fernández-Berrocal, 2016).

I would posit that, based on the data results, the emotional intelligence of a leader does influence the work engagement of virtual team members, although additional mitigating factors not included within this study may also play a role. Furthermore, nuances might exist in the application of EI within the virtual ecosystem. While this study narrowly analyzed whether a relationship existed between leaders’ emotional intelligence and work engagement of virtual team members, further investigation of the cause and effect between the variables within the virtual ecosystem would help to further advance these findings.
The second research question further explored the correlation between the virtual leader’s emotional intelligence and the individual elements of the virtual team members work engagement.

- **R2**: What is the relationship between virtual leaders’ emotional intelligence and the individual elements (vigor, dedication, and absorption) of work engagement for their virtual team members as measured by UWES?
- **H2**: High emotional intelligence in a leader results in a positive correlation with the vigor of virtual team members.

A significant correlation was found between virtual leaders’ emotional intelligence and the work engagement dimension of vigor as measured by the MSCEIT and UWES. This dimension was found to be the most significantly correlated among the variables. Vigor is the willingness to invest effort in one’s work and refers to high levels of persistence, energy, and mental resilience while working. These results expounded upon previous academic theory, including Hess and Benjamin (2015), who noted that “the emotionally intelligent leader is one who can apply emotional intelligence skills to build a culture of resilience within the organization” (p. 114). Schneider, Lyons, and Khazon (2015) determined that the presence of emotional intelligence facilitates the development of resilience. Furthermore, Northouse (2009) posited that transformational leadership raises levels of motivation in leaders and followers, while others build upon this concept (Akerjordet & Severinsson, 2010; Wang & Huang, 2009;) suggesting that transformational leadership is positively
affected by emotional intelligence and builds group cohesiveness. The findings within this study align with Dulewicz and Higgs (2003) research, which identified resilience, motivation, and influence as part of the seven main elements of emotional intelligence.

Given the results of hypothesis one after controlling for demographic components, I was interested if correlations would hold true for the highest significantly correlated work engagement dimension of vigor after controlling for the demographic attributes of age, gender, and team size. This prompted me to conduct a regression analysis using vigor as the dependent variable, and I found that MSCEIT remained highly correlated with vigor after controlling for gender ($\beta=.460, p=.021$) and team size ($\beta=.533, p=.009$). After controlling for age, the overall emotional intelligence of the leader was not significantly correlated ($\beta=.360, p=.071$). However, the EI area of strategic remained highly correlated with the vigor dimension of work engagement, even after controlling for age ($\beta=.400, p=.047$). This would suggest that the emotional intelligence of a virtual leader influences the vigor (energy, resilience, and persistence) of virtual team members regardless of gender or team size. Moreover, these results identify the significance of having the aptitude of a strategic emotionally intelligent leader in the virtual environment. Possessing this ability as a virtual leader has the propensity to effectively inspire virtual team members’ work engagement.
• **H3: High emotional intelligence in a leader results in a positive correlation with the dedication of virtual team members.**

A significant correlation was found to exist between the emotional intelligence of the leader and the dedication dimension of work engagement of the virtual team members. The hypothesis was supported. Dedication is being strongly involved in one’s work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. The results within this study broaden preceding research to include the context of virtual teams. Goleman, Boyatzis, and MacKee (2002) described resonate leaders (those who are in touch with feelings of self and others) as able to connect with team members, resulting in feelings of motivation and inspiration. These findings suggest that virtual leaders can continue to motivate and inspire virtual team members even without face-to-face interactions. In the case of the organization sampled, most individuals had never met face-to-face and little to no connection occurred outside of email and instant messaging. Given the scope of this study, frequency of communications and communication types were not reviewed; however, further investigation of these elements would provide a deeper understanding of how emotionally intelligent virtual leaders influence and build significance and pride within the virtual ecosystem.

• **H4: High emotional intelligence in a leader results in a positive correlation with the absorption of virtual team members.**
It was determined that this hypothesis was not supported. There was not a significant correlation between the emotional intelligence of the leader and the absorption dimension of work engagement of virtual team members. Absorption is the immersion within one’s work so that time passes quickly and it is difficult to detach from the work. While I hypothesized that this would be positively correlated, as I think about the results of this dimension, it appears to be a more self-governing aspect of work engagement and results can vary by task, seemingly reducing the impact of leadership influence. Therefore, individual responses could have been impacted by the tasks that team members were engaged in during the completion of the work engagement survey. Although, this particular study only analyzed the impact of a leader’s emotional intelligence on work engagement, it remains unknown whether other leadership theories and/or models might have an influencing effect on this dimension of work engagement in a virtual environment.

**Interpretation of Findings**

Emotional intelligence has been developed on the notion that perceiving emotions is the foundational ability within the theory. However, being able to perceive emotions through facial expressions and body language can be a limitation within a virtual environment. While technology does enable video conferencing to visually connect when not face to face, the organization sampled within this study did not use this technological capability and relied heavily on email and instant messaging as their primary forms of communication. Within the MSCEIT assessment tool, emotional perception is based on facial expression and visual environmental pictures, which
does not occur frequently in virtual environments, or at the very least within the virtual sample used within this exploration. Upon conducting development sessions with the individual leader’s regarding their emotional intelligence results, most conveyed that they rarely spoke to their team members or peers outside of short emails or instant messenger. While generally a desire for more personal connectivity with team members was conveyed, the benefit of conference calls or video conferences was not considered of high importance to implement this available technology into their day-to-day communication mediums. The perceive ability within this sample size was below the general population average and resulted in the overall emotional intelligence competency skewing left of the general population mean, as illustrated in Figure 3. This could indicate a need for further exploration to discover how best to identify this ability within a virtual context. Furthermore, it would be advantageous to investigate if there are more effective means to evaluate the ability to perceive emotion within a textual context.

The strategic area of EI—more specifically, the understand ability—was the most significantly correlated ability within the data sample, indicating that the ability to understand emotions and interpreting the varying degrees of emotions has a higher relevance in the virtual environment. Understand is also the most cognitive ability within the emotional intelligence framework. While there are varying degrees of findings regarding the impact of age on emotional intelligence, some studies have discovered that emotional intelligence theory increases with age (Mayer, Caruso, &
This would coincide with the ideation that as we get older, we gain wisdom and understanding through the various experiences along life’s journey. In this particular study, over 50% of the leaders as well as team members sampled indicated that they were over the age of 40. This might account for the impact the demographic of age had on the overall correlation of variables. Given the narrow focus of this study, it is impossible to determine without further investigation the cause and effect of the variables.

As a result of the findings within this study, Figure 7 introduces the Virtual Emotionally Intelligent Leader (VEIL) model. This model identifies high level emotional intelligent skills for virtual leaders to employ in order to influence a virtual team member’s ability to be persistent, resilient, and energetic towards one’s work.

![Figure 7. VEIL Model](image)

Overall, given the findings within the study, I submit that the emotional intelligence of the leader impacts aspects of work engagement within the virtual environment. The
findings of Cabello et al. (2016) hold true within the virtual environment, such that age remains an influencing factor of emotional intelligence. Although, I would posit that the application of emotional intelligence as it is applied within the co-located environment is different within the virtual ecosystem. As the VEIL model illustrates, the strategic area of emotional intelligence is the most significant influencing factor within the virtual environment. The experiential side of emotional intelligence was found to not be an influencing factor of work engagement in the virtual setting. This is likely a result of the inability to perceive emotions through body language, facial expressions, and tonality within the virtual structure. Specifically, the ability to perceive emotions within a textual communication requires different and nuanced skills to accurately determine the emotional inferences of the communication of which the current instrument, MSCEIT, does not test. Conducting research to understand how to assess and develop this ability would further the findings within this study.

Moreover, understanding the varying degrees of emotions plays a considerable role in engaging virtual team members. I would theorize that this highly cognitive ability of emotional intelligence has a key effect within the textual environment of the virtual ecosystem, although this theory would need to be investigated further to uncover what specific actions leaders perform to display this ability that influences work engagement.
**Implications and significance of study**

The implications of the findings presented within this study are significant in a number of areas. First, this study begins to fill a significant gap in literature regarding virtual leadership and supports the ongoing research of the value of emotional intelligence in the workplace. Second, practitioners have ventured in and out of virtual disbursement of team members with varying degrees of success. This study provides insights in understanding an important aspect of effective virtual leadership and work engagement. Third, this body of work begins to explore work engagement within the virtual environment. Furthermore, this study presents the VEIL model, which illustrates three abilities that virtual emotionally intelligent leaders need to effectively influence work engagement of virtual team members.

Chapter 6 will expand upon the theoretical and practical implications of this study, in addition to address the need for further research.

**Summary**

Evidence linking emotional intelligence of virtual leaders’ to the work engagement of virtual team members has been presented within this study. The theoretical model developed, Virtual Emotionally Intelligent Leaders (VEIL), represents three contributing emotional intelligence capabilities needed to influence work engagement of virtual team members. While further research is evident, discovering the correlation of leaders’ emotional intelligence on the work engagement of the virtual workplace is a significant breakthrough in the context of virtual workplace
effectiveness, as well as the domain of emotional intelligence research. The following chapter discusses the implications of the findings and identifies recommendations for future research.
Chapter 6: Conclusion & Recommendation

Summary
This study was initiated to determine if a relationship existed between the emotional intelligence of a virtual leader and the work engagement of their virtual team members. While existing literature has suggested that leadership attributes of co-located leaders would transcend into the virtual/remote work space, in the context of this study, a relationship was discovered between virtual leaders’ emotional intelligence and the work engagement of virtual team members. This finding begins to fill the gap in literature regarding the impact of virtual leadership within the virtual ecosystem. Further research is essential to uncover the various effective attributes of leadership and work engagement within the evolving realm of virtualness in the workplace.

This final chapter will discuss limitations of the study, the theoretical implications, implications for practice, and recommendations for future research.

Limitations
Under the premise that all research is flawed (Norton, 1994), there are a number of limitations that must be considered when interpreting the results of this study. First, the small sample size gathered cannot be assumed to be representative of the population of virtual teams and leaders in its entirety. Second, during the study this mid-size firm encountered organizational changes, including the downsizing of one
group and an acquisition of a smaller competitive firm. Additionally, this was the first
engagement survey conducted within the organization, which in and of itself has the
propensity to result in an increased positive bias within the engagement scores if the
respondents had any uncertainty regarding the utilization of the data. Bias has the
potential to manifest if disagreement would be perceived as uncomplimentary to the
respondent (Morrel-Samuels, 2002).

This study was strictly quantitative, limiting the analysis to the viability of the survey
data collected. Given that no qualitative attributes were explored, the study was
limited to the possible correlation between the two variables presented and does not
identify the cause and effect of the variables or the characteristics of leadership and
work engagement effectiveness in the virtual environment.

Despite the limitations identified, the study results contribute to the body of
knowledge within the virtual ecosystem and the relationship between leaders’
emotional intelligence and the overall work engagement of virtual team members.
The insight provided by this study invites opportunity to further explore the
intricacies of effectiveness associated with virtual teams.

**Theoretical Implications of Study**
The findings within the study indicate historical leadership attributes specific to
emotional intelligence influence elements of work engagement within virtual teams.
This finding begins to open the path to future research of leadership within this new
virtual ecosystem. As the desirability of virtual work arrangements continues to increase among employers and employees, the value of understanding the characteristics of effective virtual teams and leadership becomes critical within this new frontier.

**Implications for Practice**

According to Gallup’s (2016) *State of the American Workplace*, work engagement has improved slightly across the organizations that partner with the consulting group; however, work engagement has essentially remained stagnant since the onset of Gallup’s annual study. Gallup does not isolate the data between co-located and remote work environments; however, Gallup found that the number of employees working remotely increased four percentage points within four years. Additionally, within this same study, Gallup (2016) reported that workers were focused on the holistic aspect of their lives rather than just their jobs, making remote work arrangements more appealing to the workforce. Moreover, twenty-eight percent (28%) of engaged employees would change jobs to be able to work offsite. Additionally, 50% of disengaged employees indicated they would change jobs for a remote opportunity (Gallup, 2016).

The Gallup (2016) statistics identify the criticality of researchers to identify the key attributes of the virtual work environment. These results span multiple generations with baby boomers, Gen Xers, and millennials all expressing a need for well-being through a balanced work/life mix. “People are focused on their lives not only their
jobs.” (Gallup, 2016, p. 27), and virtual working arrangements are perceived by employees to provide the answer for a better work/life balance.

**Recommendations for Further Research**

The realm of virtualness opens a new frontier for research in a wide variety of disciplines. While the primary focus has been on the task orientation of work within the virtual environment, the focus has begun to shift into larger constructs that have historically been found to be effective within co-located environments.

**Work engagement theory**

In general, researchers need to continue to solidify an agreed-upon definition for the construct of work engagement. Kuok and Taormina (2017) attempted to provide a more integrated framework and measurement in their recent study. Further research utilizing the new work engagement model, which assesses the cognitive, emotional, and physical attributes of work engagement, would be advantageous to this body of research.

Longitudinal studies of work engagement in virtual teams would conceivably provide deeper insights into the long-term effects of leaders’ emotional intelligence on the work engagement of virtual team members. Additionally, such studies could provide potential insight regarding the impact of growth and change within the participants over time.
Comparative studies of work engagement attributes in virtual team environments utilizing both existing and new assessment instruments would improve the understanding and relevance of the overall virtual ecosystem. Comparative studies could also provide insights into distinctions of work engagement attributes within the virtual environment that differ from the traditional co-located workgroups.

Broadening the sample size of the participants studied to larger virtual teams could determine relevance and trends across industries. Additionally, a larger sample would help to alleviate potential bias within the results, providing a stronger statistical analysis and more complete picture of the population of virtual team members.

**Emotional intelligence theory**
Further exploration of the relevance of emotional intelligence in virtual leaders and the impact EI asserts within virtual teams would be a beneficial focus for future study. Investigating the role emotions play in a virtual environment specific to text communication could provide a deeper understanding of the dynamics of both virtual teams and their leaders.

**Leadership theory**
Considering the vast amount of leadership theory, each of these aspects would need to be explored within the virtual ecosystem to understand the value and implications each bring, if any, to virtual teams. Specifically, identifying leader attributes that are recognized as successful in virtual environments would be beneficial in the overall understanding of their impact. Furthermore, conducting a qualitative study to explore
and understand the underlying characteristics, opinions, and motivations of virtual team leaders and team members would be of a great benefit to uncovering the intricacies within the virtual work environment.

**Summary**
The findings of this study only begin to scratch the surface of the impact of leadership within a virtual environment and indicate the need for further exploration of the attributes needed in both virtual leadership and virtual work engagement. As organizations venture into operating in virtual environments, additional insight into the catalyst of work engagement in a virtual ecosystem is critical. In Gallup’s (2016) *State of the American Workplace*, it is estimated that actively disengaged workers cost the United States approximately $483 to $605 billion annually in lost productivity. As the number of employees working remotely as well as the number of employees who desire to work remotely continues to increase, it becomes paramount to grasp the key attributes needed to lead a healthy, productive, and engaged virtual workforce.
Appendix A: Work Engagement Participant E-Mail

Communication Work Engagement Survey

Dear {Employees},

As an organization dedicated to forward thinking and excellence, it is important to us that we invest our time and energy into understanding how we are doing in engaging you, our workforce, in the overall engagement of the company. This has been an initiative we have wanted to launch for some time and the opportunity has presented itself now. We have the distinct pleasure to partner with a Ph.D. student to participate in research associated with the work engagement of virtual teams. Companies that better understand the overall engagement of their teams, are better positioned to improve overall operational performance for their clients, which is near and dear to our hearts.

Your participation is valuable to Corridor Group, as well as, other virtual organizations and requires only 15 minutes of your time. My request of you is, sometime between May 1st and May 12th, go to http://virtualeiresearch.com/ click on Work Engagement Survey (All Employees) on the right hand side of the page and complete all 3 forms (consent form, demographic survey, and work engagement survey). As mentioned, a third party is conducting the research and your response is completely anonymous. The benefit for Corridor Group’s participation, is the insights we will receive from the cumulative trends of all participants.

Should you have any questions, please reach out to your Human Resource Manager or you can reach out directly to virtualeiresearch@gmail.com.

Thank you in advance for your participation!
Appendix B: Work Engagement Survey
Participant Follow-up E-mail

Communication Follow-up Work Engagement Survey

Dear {Employees},

This is a friendly reminder, if you have not already visited http://virtualeiresearch.com/ and completed the work engagement survey, you have one more week to provide your valuable feedback. It will take about 15 minutes to complete. Please note, it is important to complete all three forms. Should you have any questions, please reach out to your Human Resource Manager or you can reach out directly to virtualeiresearch@gmail.com.

Thank you in advance for your participation!
Appendix C: Leader Emotional Intelligence
Participant Email

Communication to Leaders regarding Emotional Intelligence Assessment

Dear {Leader},

As you are aware, we have partnered with a Ph.D. student to participate in research regarding virtual teams. Part of this research will look at the Emotional Intelligence of virtual leaders. Emotional Intelligence is one of many leadership competencies thought to be associated with driving employee engagement and therefore, our PhD candidate is investing in each of you by providing an emotional intelligence assessment, as well as, a one hour coaching session to review your individual results. These results are private and will only be shared between you and the assessor. You will have between May 13th and May 19th to complete the assessment. Instructions to complete can be found at http://virtualeiresearch.com/ under Emotional Intelligence (Leaders Only) on the right hand side of the page. Plan to dedicate 45 minutes of uninterrupted time to complete. Kimberly Sebastian, will reach out to you directly to set up time to review your results. She will be correlating the results of the emotional intelligence assessment to the work engagement of team members to determine what, if any, correlation exists in virtual teams. This is a tremendous investment in you. Please make the time to get the most out of this opportunity.

Should you have any questions, please reach out to your Human Resource Manager or you can reach out directly to virtualeiresearch@gmail.com.

Thank you in advance for your participation!
Appendix D: Informed Consent

Research Title
The impact of leader’s emotional intelligence on the engagement of virtual team members

Background and Purpose
As a student at Benedictine University in Lisle, Illinois, I am engaging in research to fulfill requirements of Values-Driven Leadership Doctor of Philosophy (Ph.D.) program. Given the growth of virtual teams, it is critical to evolve our knowledge and understanding to drive engagement in virtual environments. As a leader of a virtual team, I am interested in continually learning beneficial practices to enhance engagement of virtual team members, more specifically understanding the impact emotional intelligence plays in this situation.

Procedures
Thank you for your participation in this research. Your participation is strictly voluntary. In order to participate, leaders must have three or more virtual team members they have led for six months or greater. Virtual team members must be a part of the team for at least six months. If you agree to move forward and participate, you will:
1. Read and sign an electronic consent form (3 minutes)
2. Complete demographic survey (5 minutes)
3. LEADERS – complete Emotional Intelligence Assessment (45 minutes)
4. TEAM MEMBERS – complete Utrecht Work Engagement Scale (5 minutes)

Confidentiality and Risk
Excerpts and results of this study may be published and/or presented at academic conferences. Participant names and organizational information will not be disclosed and data will be presented in aggregate form only. Provisions will be made for the safe and secure storage of all research data with no personal identifying information maintained with ultimate disposal after a period of seven years. You have a right to withdraw from the study at any time.

Consent
By clicking YES below, I agree to participate in this study.
☐ Yes
By clicking NO below, I decline to participate in this study.
☐ No
This research is being conducted in part to provide data for a published dissertation study and fulfill requirements for my Ph.D. in Values-Driven Leadership in the business school of Benedictine University in Lisle, Illinois and overseen by Benedictine University faculty member (Dr. Marie DiVirgilio, Ph.D.). The Institutional Review Board (IRB) of Benedictine University has approved this study. The Chair of Benedictine University’s IRB is Dr. Alandra Weller-Clarke and can be reached at (630) 829-6295 or by email aclarke@ben.edu. The chairperson of this dissertation is Dr. Marie DiVirgilio, Ph.D. and can be reached at (630) 829-2178 for further questions or concerns about the research.
Appendix E: Leader Demographic Survey

Leader

A. Last Name, First Initial

B. Email *optional*

C. What is your department?

- Coding Services
- Revenue Management Services
- Sales & Marketing
- Education Services
- Advisory & Consulting Services
- Support Services (HR, IT, Finance)

D. What state do you reside in?

E. What is your gender?

- Male
- Female

F. What is your age?

- 17 to 19 years
- 20 to 29 years
- 30 to 39 years
- 40 to 49 years
- 50+ years

G. How many years have you led virtual teams?

- Less than 6 months
- 6 months to 1 year
- >1 to 3 years
- >3 to 6 years
- >6 to 9 years
- >9 to 12 years
- >12 to 15 years
- >15 to 21 years
- Over 21 years
Appendix F: Team Member Demographic Survey

Team Member

1. Your Leader’s: Last Name, First Initial

2. What is your department?
   - Coding Services
   - Revenue Management Services
   - Sales & Marketing
   - Education Services
   - Advisory & Consulting Services
   - Support Services (HR, IT, Finance)

3. What state do you reside in?

4. What is your gender?
   - Male
   - Female

5. What is your age?
   - 17 to 19 years
   - 20 to 29 years
   - 30 to 39 years
   - 40 to 49 years
   - 50+ years

6. How many months/years have you been a member of this virtual team?
   - Less than 6 months
   - 6 months to 1 year
   - >1 to 3 years
   - >3 to 6 years
   - >6 to 9 years
   - >9 to 12 years
   - >12 to 15 years
   - >15 to 21 years
   - Over 21 years
Appendix G: Utrecht Work Engagement Survey

Work & Well-being Survey (UWES) ©

The following 17 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the “0” (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by crossing the number (from 1 to 6) that best describes how frequently you feel that way.

<table>
<thead>
<tr>
<th>Almost Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Never**
- A few times a year of less
- Once a month or less
- A few times or less
- Once a week
- A few times a week
- Every day

1. ________ At my work, I feel bursting with energy
2. ________ I find the work that I do full of meaning and purpose
3. ________ Time flies when I’m working
4. ________ At my job, I feel strong and vigorous
5. ________ I am enthusiastic about my job
6. ________ When I am working, I forget everything else around me
7. ________ My job inspires me
8. ________ When I get up in the morning, I feel like going to work
9. ________ I feel happy when I am working intensely
10. ________ I am proud of the work that I do
11. ________ I am immersed in my work
12. ________ I can continue working for very long periods at a time
13. ________ To me, my job is challenging
14. ________ I get carried away when I’m working
15. ________ At my job, I am very resilient, mentally
16. ________ It is difficult to detach myself from my job
17. ________ At my work I always persevere, even when things do not go well

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## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorption</td>
<td>full immersion in one’s work such that time passes quickly and one has difficulties detaching oneself from work</td>
</tr>
<tr>
<td>Dedication</td>
<td>being strongly involved in one’s work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge</td>
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<tr>
<td>Emotional Intelligence (EI)</td>
<td>a set of capabilities that focus on an individual’s capacity to access, monitor, and discriminate between one’s own emotions and those of others</td>
</tr>
<tr>
<td>Manage Emotions</td>
<td>ability to manage emotions in oneself and others</td>
</tr>
<tr>
<td>Perceive Emotions</td>
<td>ability to accurately identify one’s own and other’s emotions through perceiving emotions in facial and postural expressions</td>
</tr>
<tr>
<td>Understand Emotions</td>
<td>the capacity to define, analyze, predict, and understand the complexity of emotions</td>
</tr>
<tr>
<td>Use Emotions</td>
<td>ability to use emotions to facilitate thought and problem solve</td>
</tr>
<tr>
<td>Vigor</td>
<td>the willingness to invest effort in one’s work and refers to high levels of persistence, energy, and mental resilience while working</td>
</tr>
<tr>
<td>Virtualness</td>
<td>the state of being virtual; working remotely</td>
</tr>
<tr>
<td>Work Engagement</td>
<td>a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption</td>
</tr>
</tbody>
</table>
References


