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A Multi-Level Investigation of Leadership Effectiveness and Systems Awareness in the Leadership Circle Profile

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A MULTI-LEVEL INVESTIGATION OF LEADERSHIP EFFECTIVENESS AND SYSTEMS AWARENESS IN THE LEADERSHIP CIRCLE PROFILE

by

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ABSTRACT

Leadership is a complex and multifaceted phenomenon, with scholarly literature that documents the progression from leaders focused on inspiring transformation in others, to leaders who can engage entire systems towards more globally conscious and ethically focused actions. Such leadership involves increasingly complex relationships, perspectives and context. Empirical contributions to the study of leadership, however, have remained focused on the individual and thus limited to a single level of analysis. As researchers acknowledge the dynamic process of leadership, it is paramount that studies identify and investigate the multiple layers of analysis present.

This study sought to uncover patterns in leadership effectiveness by statistically interpreting the variance that existed at multiple levels of analysis. Utilizing The Leadership Circle Profile, an existing 360-degree instrument which integrates leadership competencies and internal assumptions that span leadership theories and are correlated with stages of adult development, this study employed multi-level modeling techniques (MLM). Specifically, leadership effectiveness was examined as it varied among participants (level-one) and across industries (level-two). Hypothesis testing revealed that gender, ethnicity, management, and education levels were positively-oriented predictors of leadership effectiveness. However, second-level variance was found not to be best explained by leadership effectiveness; instead, exploratory MLM analysis revealed that systems awareness was a particularly powerful construct when understood from an organizational perspective. Additional analyses were conducted and revealed that in addition to gender, other predictors of systems awareness were age, industry type, management, and education levels, as well as the distance score between self and others.

This study extends the literature by demonstrating the importance of context, in that as the models gradually incorporated first and second level predictors, the emphasis and contribution of predictors changed. Thus, this study provided evidence for the consideration of more complex empirical studies in leadership and emphasized the marked difference of practicing leadership with systems awareness. Further, the findings of gender, education, and management level support the development of personal and professional growth while highlighting the significance of feminine leadership. Indeed, as global growth requires a deeper understanding of resources and complex relationships, effective leadership will need to be met with heightened capacity in systems awareness.

DEDICATION

To the pursuit of a more globally conscious and ethically grounded leadership, to our highest selves, and to the communities that shape us.

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CHAPTER ONE

BACKGROUND AND PURPOSE OF THE STUDY

Leadership must be more conscious. In a world of depleting resources and competing gains, leaders must find ways to envision new potentials. Indeed, Western (2008) called for such action through the formalization of the eco-leader discourse, which among other principles required an understanding of connectivity or systems thinking, eco-ethics, and leadership spirit. However, such concepts can seem soft when, western leadership has traditionally been performance-driven, associated with role, and power.

So then, what constitutes effective leadership? While leadership effectiveness and effective leadership can be considered constructs in and of themselves, many major theories in leadership imply a positive impact on performance and more frequently than not, each theory is coupled with an instrument for assessment purposes. For example, Kroeck, Lowe & Brown (2004) outlined at least 30 such instruments explaining that the spectrum of assessments can be understood by foundational theories, methods of implementation, types of raters, and the questions they answer. While trait-based measures like the Multifactor Leadership Questionnaire for Research (MLQ) have been the most widely utilized (Avolio & Bass, 2004), behavioral and competency based models like the Leader Behavior Description Questionnaire (LBDQ), the Leadership Opinion Questionnaire (LOQ), and the Leader Member Exchange Measure (LMX) have gained popularity due to their position that leadership can be developed or learned. Supporting the notion that leadership is available to everyone, the conversation in leadership instrumentation has moved from traits to behaviors. Further research has supported that trait-based assessment pales in comparison to behavioral leadership's

predictive ability for specified outcomes (McKenna, Shelton, & Darling, 2002), as effectiveness can be associated with specific leader behaviors (Lew, Lippitt & White 1939; Vroom & Jago, 1978).

Even among instruments that assess leadership behaviors, much disagreement exists due in part to the use of multiple instruments within a particular theoretical framework (Kroeck, Lowe, & Brown, 2004) as well as the difficulty in comparing diverse constructs and measurement techniques across taxonomies (Yukl, 2012). Attempting to bridge these taxonomies, Yukl (2012), conducted a meta-analysis of leadership behavior literature as it related to effectiveness, concluding that at least four meta-categories existed with 15 behavioral components. Such meta-analyses, however, can be controversial, particularly when one theoretical frame is predominant. What is not needed is a grand theory of leadership (Alevesson, 1996), but permission for researchers to agree that more than one type of leadership may exist.

Multiple styles of leading make conceptual sense, as it is widely acknowledged in the leadership field that cultural variables and context matters. Since culture is the unique combination of underlying values, assumptions, and beliefs that lie within individuals, between groups, and in the processes of structure (Schein, 2004), a one-size fits all model of leadership is as unlikely as one form of culture but, nonetheless has been pursued (Goethals & Sorenson, 2006). Regardless, the link between leadership and culture remains proximal and complex. As Schein (2004) stated, while cultural norms may govern how organizations will respond, "...it can be argued that the only thing of real importance that leaders do is to create and manage culture" (p.11).

Cultural studies involving leadership have traditionally examined only one organization, predominantly utilizing case studies, or staying within a specific sector or industry. In research involving more robust quantitative methodology, culture has been delineated across national lines or ethnicity. Most widely regarded is the GLOBE study, which investigated how culture related to societal, organizational, and leader effectiveness through an extensive study of 62 countries (House, 2004). While the contributions of the GLOBE study are vast and particularly detailed, House feared that what was occurring was Western hegemony. Specifically, that similarity in definitions and conceptions of leadership were an indication of Western dominance. However, taking into consideration that the world has become increasingly flat (Friedman, 2005), national lines may not be the strongest demarcation of culture.

With regards to corporate leadership, culture has been at the heart of Higgin's (2005) work. Asking the question, *what factors make leadership transferrable to an industry?* Higgins uncovered elements of organizational culture that supported individual growth. Such culture, Higgins asserted, created "career imprints", historical experiences and accumulation of embodied knowledge. In some instances, these career imprints predicted the growth trajectory of individuals from one organization into others across industries. Findings like these are particularly potent as industry leaders are progressively inclined to move across organizations and industries. In their annual report, Booz Allen (2012), investigated the transfer patterns of Chief Executive Officers (CEOs). In 2011, 14.2% of the world's top 2,500 companies replaced their CEOs (Booz Allen, 2012). That percentage is a noteworthy increase from 2010, when the turnover rate was 11.6%. While the contributions to global leadership have been numerous, instances of CEO

turnover and success have not improved. As top executives continue to test their leadership skills by transferring into diverse industries, the work of Schein (2004) and Higgins (2005) becomes evermore solvent, further supporting the notion that leadership development is context-specific and learned.

Understanding how learned skills or competencies impact leadership effectiveness is particularly difficult to capture in assessment, especially when it is acknowledged that leadership does not occur in isolation but is a nested phenomena. Consistent with Bronfenbrenner's Ecological Systems Theory, later renamed the Bioecological Model, individuals are influenced by many external factors (2005). Such influences do not have a linear relationship but interact at differing levels. When understood in a nested model, influences that impose a more direct weight are constructed closer to the subject. As proximity decreases, less direct influences encompass, but move farther from the subject and subsequent influences.

While it is acknowledged that groups, dyads, clusters, organizations and cultures add depth to the understanding of leadership, the vast majority of empirical work remains at the individual level of analysis (Dionne, Gupta, Sotak, Shirreffs, Servan, Hao, Kim, & Yammarino, 2014). In an effort to, evaluate and recap the trajectory of empirical work surrounding the levels of analysis in leadership research, Dionne et al. (2014) conducted a meta-analysis of 25 years of research in the Leadership Quarterly. From this work, 798 articles were reviewed. Out of 522 empirical articles, only 17% accounted for a multi-level approach. Utilizing a single lens for analysis, however, does not contribute to critical theory and leaves leadership literature flat. As researchers acknowledge the

layered nature of leadership, it is paramount that studies identify and investigate the multiple levels of analysis.

At a time in history when critical conscious leadership is needed, awareness must be raised in both knowledge and practice. It is not enough to study the isolated individual nor can a leader act with only one frame in mind. Grace (2011) purported in *Sharing the Rock,* that it is time for leadership to go beyond self, beyond direct spheres of influence, and to act from a capacity that acknowledges the greater whole or system. As such, investigations in leadership effectiveness must also engage with an awareness of the system.

To date, there is a dearth of research that studies leadership effectiveness using a multi-lens or unified approach as it spans multiple industries and organizations. Ignoring that environments like industry settings contain culture and therefore should be examined as units of external influence or nested phenomena is a mistake. As the retention of top executives decreases, uncovering patterns in leadership effectiveness will become increasingly helpful particularly if such inquires can integrate a systems theory approach. Through acknowledging that instruments designed to measure a single theory of leadership are limiting and accounting for context by a multi-level analysis, empirical studies in leadership can make a vast improvement to the field by raising awareness and heightening the conversation. This study attempts to bridge these gaps.

Problem Statement

There were several compounding issues that guided the inquiry of this research. First, a one-size fits all theory of leadership is neither practical nor useful. Adaptability in leadership is pivotal as changing context places new demands. Therefore, a

combination of frameworks and competencies is necessary. Second, as a consequence, instrumentation that supports only one theory of leadership is limiting. As traditional instruments have often been single-sourced, more dynamic points of data are desirable. With this in mind, assessment has struggled to incorporate the developmental, contextual, and nested nature of leadership. While cultural studies across national lines have added substantial value, little remains known about the potential cultural differences in leadership effectiveness across industries and organizations.

The level of analysis in leadership studies is particularly critical, not just for scholarly work but especially when it comes to understanding, developing, and consulting to leadership in professional settings. In order to enact, coach, or support leadership, leaders, consultants and scholars need to understand both the patterns of leadership effectiveness and differences that exist among individuals within systems. Further, if the desire of research is to advance the conversation and understanding of leadership, more complex and consciously-oriented components of leadership must be examined. In order to accomplish this, further research is needed that expands the breadth of systems examined and investigates the multi-level variance across variables.

Purpose of the Study

This study's original purpose was to uncover patterns in leadership effectiveness across industries and interpret the differences that may exist across individual and industry variables. However, in investigating such aims, additional themes arose that enriched this study's purpose. Specifically, systems awareness was studied across organizations and provided further depth in understanding the variance of nested phenomena associated with leadership. Utilizing The Leadership Circle Profile (TLCP),

an existing 360 instrument, which assesses a variety of leadership competencies grounded in leadership, psychology, and adult development theory, this study sought to answer the following research questions:

1) What similarities and differences exist between individuals within distinct industries in TLCP?

2) How does leadership effectiveness vary across industries in TLCP?

3) How does leadership effectiveness vary across industries in TLCP when individual-level variables are considered?

4) And if variance warrants analysis at the industry-level, how does leadership effectiveness vary across industries in TLCP when industry-level variables are considered?

5) If variance is limited at the industry-level, where might it reside and which leadership competency best explains this variance?

6) How does this leadership competency vary when first-level variables are considered?

7) How does this leadership competency vary when second-level variables are considered?

Delimitations

Many instruments exist within leadership literature that may have been appropriate for consideration with regard to the aims of this study. However, TLCP was selected for several reasons. First, TLCP has a broad range of applicability. Industries included within its clientele span education, energy, manufacturing, nonprofits, and media to name a few. Utilizing this instrument provided variability and scope that has

often been missing from existing literature. Second, TLCP was not developed to assess one theory or type of leadership. In so far, as there are many ways to conceptualize leadership, there are equally as many ways to enact leadership. The Leadership Circle Profile therefore provides an assimilation of competencies that span multiple theories in leadership, rather than elevating one particular theory. Third, TLCP incorporates concepts from human development theory. Thus, it accounts for individuals' progression, uniqueness, and complexity.

As an archival data set, the TLCP, its design, and applicable variables were preset. Therefore, the ability to manipulate variables was constrained. Additionally, while participants likely either self-selected, were part of educational development, or engaged in a professional learning opportunity, the reasons for their participation remained anonymous as did their identities. Thus, conclusions as to why TLCP was preferred or utilized over other existing instruments and avenues were not known and thus, a self-selection bias is likely at play.

As a 360-degree instrument, multiple raters contribute to variable scores. While there are benefits to be gained from a variety of perspectives, 360 instruments are survey-based, non-experimental, and could potentially have other reliability issues. This could be compounded by the differing understandings and individual definitions of leadership implied; thereby, limiting the extent to which this study could be applicable to other definitions of leadership.

Significance of the Study

The implications of this study's work will be addressed in the following assertions. First, while leadership effectiveness is a leading component of leadership

research, it is often conceptualized along individual variables. When group and organizational variables have been considered, they are often limited to case studies or dichotomous predictors (i.e. private verse public organizations). Expanding the lens of analysis will open up further discussion of the similarities within and across industry leadership.

Second, as context and development is paramount to leadership but often not accounted for within the research, scholars may be interested to use multi-level modeling (MLM) to further explain nested phenomena. Third, the interpretation of similarities and differences across industries and organizations within this study may lead to the enhancement or redesign of leadership development programs. Fourth, the variables that predict leadership effectiveness and systems awareness may provide insight into the perceptions of culture and effectiveness in industries and organizations. As leadership increasingly becomes a global desire and executives continue to move from one industry or organization to another, further studies may be able to deduce the relationship of leadership competencies, effectiveness, and transferability across context. Noting the similarities and differences across layers of analysis will deepen the understanding of how these groups contribute to industrial and organizational culture and ultimately impact individuals in leadership.

By acknowledging these layers, coaches, consultants, practitioners, and scholars can generate new possibilities. Recognizing that dynamic interaction is inherit and natural, creates opportunities for dynamic inquiry, deepened dialogue, and heightened development. Ultimately, understanding how variables influence leadership effectiveness across industries will increase leaders ability to reach new levels.

CHAPTER TWO

LITERATURE REVIEW

The theoretical history of leadership is rich. And while, academic research on the topic of leadership is young compared to other disciplines, its breadth of work is expansive. However, there still remains a gap, as few studies look at how leadership varies across industries. This is largely due to researchers resistance to consider more than one leadership theory or frame, inability to account for multiple frames, and limited study samples.

This section will begin by providing a recent history of the major and formalized theories in leadership studies. Next, a review of literature specific to organizational theory will follow. Then, for contextual understandings, contributions made to leadership through human development will be examined. Finally, significant instruments in assessing leadership will follow and a case for utilizing 360 instruments will conclude.

Leadership Literature

Industrial

Early foundations of leadership as a social science arose during a time when "man-power" was believed to fuel industrial success and therefore is marked by efficiency and linearity (Bass, 1990). The following theories outline the stems, from which more modern conceptualizations have grown. While these theories are presented in a linear fashion historically, it is important to note that the evolution of leadership theory has been one of waves in social discourses (Western, 2008). Social discourses represent boundaries in language and limits in possible truth but are often interconnected by similarities and persisting threads of relevancy that carry over into new

conceptualizations (Western, 2008). Therefore, while theories are represented as singular entities, their progression and development over time often overlaps and draws from previous contributions.

Great Man. Leadership literature dates back to some of the earliest philosophical references with the writings of Greek philosophers like Plato and Aristotle. Indeed, Plato placed high esteem upon "leaders" as individuals (Bass, 1995; Burns, 1978). They possessed capabilities and characteristics that were not common to the general public. Even much later in history, theorists like Machiavelli emphasized the knowledge and power of leaders (Antonakis et al., 2004). While Machiavelli's conceptual framework for leadership differed from Plato's, they shared the view that there is inherently a difference in leaders and followers. Traits and ways of being that differentiate the leader from that of followers became known as the "great man" theory in the early 1900's and can be found widely throughout historical literature. Bass (1990) recounted that these great men "created what the masses could accomplish" (p. 37) and history was often credited to their decisions and actions. Underlying the anecdotal evidence was an assumption that leaders were born and not made, limiting the access of leadership to individuals' birthright. Due to a lack of empirical studies supporting great man theory, and increasing evidence that men and women are capable of leadership, great man theory has remained a historical benchmark and not a predominant discourse in recent leadership literature (Bass, 1990). Despite this, emphasis on the individual remains predominant.

Trait Theory. Distinguishing itself from great man theory, trait theory did not differentiate whether attributes or leader characteristics were inherited or acquired. Instead, the intent was to focus on empirically isolating those traits for investigation and

deeper understanding. Though attempts to isolate such traits have been complicated by the vast array of definitions surrounding the term "trait". Such definitions of "personality, temperaments, dispositions, and abilities, as well as to any enduring qualities of the individual including physical and demographic attributes" have been cited and studied as traits within the literature (Zaccaro, Kemp, & Bader, 2004, p. 103).

Trait theory marks some of the first works in applied psychology to make sense of leadership. Grounded in functionalism, these first studies invited questions of conscious verse unconscious processes and attributes and produced the first organizational psychology text (Munsterburg, 1913), which promoted the work of mental testing and experimental studies. One of the most notable pieces of work is Stogdill's Handbook of Leadership (1948), a meta-analytical survey of over 100 studies, concluding with a summary of best traits of effective leaders. However, Gibb (1954) largely discredited the work citing: measure unreliability, leniency, halo effects, and mis-specified variables.

While, trait-based leadership experienced a dearth in activity following such accusations, modern researchers like Judge, Bono, Ilies, & Gerhardt (2002) and Zaccaro et al. (2004) have largely revitalized the field, claiming that individual differences can still be predictors of leader effectiveness. Interestingly, while modern trait theory still assumes that effective leaders have differing characteristics from non-leaders, recent developments have prompted researchers to conclude that it is not traits alone that predict success or effectiveness; instead, it is a combination of traits and situations (Kirkpatrick & Locke, 1991; Zaccaro, et al., 2004). For this reason, researchers have been more open to examining a combination of traits and behaviors.

Behavioral. While the potency of trait theory waned, behavioral styles of leadership gained momentum. Similar to the definitional issues of trait theory, theorists and researchers alike have characterized behaviors in a range of ways. Behaviors can be understood as mannerisms, styles, performance types, or dimensions. The work of behavioral leadership began with the research of Lewin, Lippitt, and White (1939) and was continued by Lewin and Lippitt (1938), who defined the styles of autocratic, democratic, and laissez-faire leading. Later, the Ohio State University (Stogdill & Coons, 1957) and the University of Michigan (Kahn & Katz, 1953) expanded behavioral research by coining the terms "consideration" and "initiating structure" as two distinct scopes of behavior. These scopes represented employee-focused versus production-oriented behaviors. Adding to the discourse, B.F. Skinner popularized behavior modification through positive reinforcement (Miltenburger, 2004). And while, these contributions continued to be utilized particularly in management, behavioral leadership, has in recent years, been largely incorporated into other theoretical lenses and does not often stand-alone (Zaccaro et al., 2004).

Situational. Drawing from the contributions of trait and behavioral leadership theories, comparative research studied how these individual properties varied across social conditions. Situational and contingency models grew from such studies, indicating variables that impacted optimal performance and leadership effectiveness. Of particular note are the contingency model of leadership effectiveness and cognitive resource theory emphasizing the leader's internal state (Fiedler, 1978; Fiedler & Garcia, 1987), the normative decision-making model (Vroom & Jago, 1978; Vroom & Yetton, 1973), path-goal theory (House, 1971), and situational leadership theory (Hersey & Blanchard, 1969)

– all centering on the perceived behavior of leaders. Though there are similarities among these theories, each supplies a unique approach to the examination of variables and subsequently has offered a distinct instrument. The applied value that such theories contribute is that leadership is not stagnant, and indeed calls for adaptive behavior. As Ayman (2004) pointed out, flexibility is one trait (i.e. internal state) that assumes behaviors will vary and is highly supported in the leadership literature for effectiveness. However, contingency and situational theories are complex and often difficult for leaders to implement in the field when assessment and decisions are required in real time (Yukl, 2010). Further, such approaches do not adequately account for the development, work, and support of followers (Yukl, 2010).

Post-Industrial Leadership

Servant Leadership. The stance of trait, behavior, and situational models of leadership has largely focused on the leader and as a result, highlighted a top-down relationship between leaders and followers (Rost, 1991). According to Rost, post-industrial leadership focused on relationships and growth, its applications expanded beyond traditional views of business and politics. Variables concerning leadership were not deterministic and stagnant but instead, showed development. These theories supported advancement in their respective participants, inclusive of leaders and followers. One of first examples was offered in 1970, when Greenleaf published an essay entitled, *The Servant as Leader*. He further expanded this work into a book, Servant Leadership (1977) shortly after. Within its contents, the desire to serve first, rather than lead was detailed. He argued that it was through this desire to serve that leading would ensue as a conscious choice. Furthermore, his work provided an ethical guide to those

who chose to embark on the journey of leadership through service. The emphasis that Greenleaf placed on the community and development of a leader as an ethical servant first, moved the literature away from a leader-centric voice.

Leader-Member Exchange. The concern for the relationship between leaders and followers continued with the contribution of the leader-member exchange theory (Dansereau, Graen, & Haga, 1975). Leader-member exchange theory offered that high quality relationships were founded upon mutuality and trust between leaders and followers whereas; low quality relationships were based upon contractual obligations. The conceptualization of relationships as exchanges, assumed a dyadic view of interactions. Although, a departure from leadership as a singular phenomena, the view of human association remained overly simplistic.

Transforming & Transformational Leadership. Moving the focus from a leader-only perspective paved the foundation for the development of Burns' (1978) transforming leadership. While servant leadership concentrated on the act of leadership (Greenleaf, 1977), and leader-member exchange placed emphasis on the relationship of leader and follower (Dansereau et al., 1975), transforming leadership defined the process by which relationships of the leader and follower were engaged and led to positive change (Burns, 1978). Perhaps, the most influential distinction that transforming leadership provided to the field was in defining the difference between management and leadership by adding a moral component to the work of leadership. Burns argued that management or supervisory roles often used transactional forms of leadership where, there is literally a transaction or exchange for performance, productivity, or behavior. Conversely, transforming leadership focused on the relationship of leader and follower in

terms of their higher needs and ultimately in terms of their development. Burns stated that transforming leadership was powerful and complex, and ultimately could elevate followers into leaders and leaders into ethical agents of change. In this way, transforming leadership could be seen as a mutual process as "leaders and followers raise one another to higher levels of motivation and morality" (Burns, 1978, p. 20).

Adapting transforming leadership to the organizational setting, transformational leadership (Bass, 1998) focused more on the task of elevating goals, expectations, needs and performance rather than the development of people holistically. Whereas, transforming leadership is a process to participate in, transformational leadership is a condition or state of being the leader holds. Although seemingly minor differences, the conceptual language around each theory contributes to the possibilities and limits of the discourse. Further, these distinctions indicate the nature of time in which each was fostered. Burns (1978) offered language that empowered change of social movements and larger system possibilities whereas Bass (1998) translated actions specifically for organizational leaders.

Adaptive Leadership. Transformational leadership, in many ways resulted in what Bryman (1992) called a "new paradigm" by placing a larger emphasis on change as pivotal to leadership. Outcomes were apart of a process, and that process often resulted in a change within individuals. Further, sustained results required people to change their beliefs, their ways of thinking and ways of being (Heifetz, 1994). Heifetz deepened the understanding of change and what it meant to individuals when he argued that change was dangerous as it confronted people with loss and challenged their identity. This type of change, Heifetz stated, is the challenge of exercising adaptive leadership. Similar to

the dichotomous relationship between transformational and transactional leadership (Burns, 1978), Heifetz compared and contrasted adaptive challenges to technical problems. He proposed that technical problems could be solved by expertise and standard procedures, whereas adaptive challenges required leadership that challenged norms, utilized skillful communication, and could experiment with new ideas and discoveries. Heifetz placed particular weight on the understanding that adaptive leadership interventions needed to occur over time and were not a one-time quick fix but a long process of investment in change.

Organizational Considerations of Leadership Theory

Nothing in leadership can be accomplished in isolation (Wheatley, 1999). Leadership necessitates that there be followership, that the process of leadership is a group process in action, and that groups are apart of a larger structure. As such, the context in which this action and followership occurs has also been studied.

Classical Organizational Theory

Organizational leadership cannot be specified to a definitive date, as it is well-informed by ancient wisdom and early philosophy; however, classical organization theory was popularized near the turn of the eighteenth century (Shafritz, Ott, & Suk Jang, 2005). Constructed to accomplish economic goals and maximize production, classical organizational theory proposed division of labor and logic-driven rationality. Smith's (1776) work, *An Inquiry into the Nature and Causes of the Wealth of Nations*, was grounded in economic gains, centralization of power and resources, and the specialization of management. Further specification, regarding processes for labor and production, was introduced by Taylor (1911) in *Principles of Scientific Management.* Taylor outlined

systematic guidelines for management, the collection of information, and the execution of rational decisions and allocations. Likewise, applying similar principles, Weber (1922) distinguished the bureaucratic organization, which was situated in formal procedures and the delineation of superiors from subordinates. However, the resounding critic of classical organizational theory is that it fails to take into account ethics and the overall well-being of humanity for the sake of economic gains.

Mid-Century Organizational Theory

At a time when some social science theories drew conclusions from exploitive conditions, Follett (1926) called for practices that employed "power with" others rather than "power over" others. Follett's conceptualization did not diminish authority but instead provided the invitation for authority to consciously practice more participatory models. Although, scientific management was the predominant conceptual lens in the early 1900's, Follett's contributions incited more conscious decisions regarding power and encouraged a reframing of authority.

Indeed, the nature of power and authority as it related to groups became a prevailing area of interest. Lewin (1947) was the first to coin the term group dynamics, which attempted to explain group phenomena. Lewin offered the following formula $B = f(P,E)$ where behavior (B) can be explained by the relationship between personal characteristics (P) and environmental factors of the group (E). More recent conceptualizations of group dynamics include studying the system as it relates to boundaries, authority, role, and task (Green & Molenkamp, 2005).

Modern Concepts of Organizational Theory

Appropriately, some of the insights to leadership with systems-oriented lens have been developed from existing organizational literature. Senge (1990), for instance, honed guidelines for exercising double-loop learning, originally explained by Argyris (1957), which Senge referred to as generative learning. Utilizing five disciplines, Senge suggested an approach to creating change within organizations, which ultimately led to generative learning: a transformative learning that develops new ideas, behaviors, and insights (Senge, 1990). This provided a framework for organizations to move towards change while simultaneously bringing awareness to the importance of feedback in the process, integrating this information as change initiatives were executed. The first and most relevant contribution of Senge's five disciplines for this particular discussion is systems thinking. Senge invited learners to engage in thinking that explores how the parts of an organization fit into the whole. He warned that inability to envision how feedback informs the organization long-term often leads to the inability to problem-solve and ultimately results in defensive routines.

Systems thinking as it was conceptualized by Senge (1990), was an organizational application of General Systems Theory (GST) formally offered by von Bertalanffy in the early 1900's. Conceptually GST, von Bertalanffy explained, was the integration of various sciences, natural and social in order to generate a general theory of systems (1968). Specifically, systems were viewed as a part of larger encompassing systems and interdisciplinary approaches were utilized for deeper understanding. In doing so, von Bertalanffy aimed to give depth and breadth in conceptualizing phenomena. However, original hypothesis were met with resistance initially. The advancement of the physical

sciences, particularly in the areas of physics, has highlighted the deep levels of connectivity from natural to social science; thus, supporting the definition that a system is, a complex of interacting components and with the relationship among them, allow a boundary or identification process both in the physical and affective sense (Laszlo, 1975). In such capacities, components of a system impact the system, are influenced by one or more other components within the system, and are impacted by the system.

Recognizing that a system is a living network of process, Wheatley (1999), suggested that insights from science, particularly the quantum study of science, could contribute to leadership theory. Grounded in her argument that relationships are the building blocks of life, Wheatley incorporated the complexity of systems thinking by outlining how individuals, in being interconnected, are part of the system and thus, in experiencing change, change the system. It is through this change that leadership can evoke "potentials" (Wheatley, 1999). As she explained, potentials represent future possibilities in the form of energy. In that, "relationships evoke these potentials. We change as we meet different people or are in different circumstances" (Wheatley, 1999, p. 170). In this way, relationship mark interactions, which have the ability to influence and often to shape, change, and impact the future. Thus, it is the task of leadership to harness this potential energy in meaningful and purposeful ways. However, seeing the system and these potentials can be increasingly difficult as they are subjective to context and the moment.

Yet, what is a moment? Furthering the discussion, Scharmer (2007) proposed that leadership requires allowing the past to meet the future while attuning oneself to the large system. He dictated that the crisis of our time is to change how learning occurs and

consequentially the results that are derived from it. While this is similar to Senge's (1990) concept of generative learning, Scharmer added that in order to learn, individuals must allow themselves to have an open mind, heart, and will. In doing so, he believed that time could be understood in terms of "letting go" of our history and "letting come" the future (Scharmer, 2007). Scharmer's framework in Theory U, involves: co-initiating, co-sensing, co-presencing, co-creating, and co-evolving. The respective "co's" are symbolic of the individual in collaboration with others and thus consistent with Whealtey's (1999) notion of self in relationship or Senge's (1990) parts within the whole. However, Scharmer (2007) argued that how Theory U differed from double-loop learning was that it originates from what he referred to as the "blind spot". At the bottom of Scharmer's "U" is "Presencing", which he offered allowed seeing from the deepest source, illuminating the blind spot. In exploring this deeper source, Scharmer directly addressed the distinction between types of "knowing". Ultimately, in understanding our knowing, Scharmer postulated, "to the degree that we see our attention and its source, we can change the system" (2007, p.11). Scharmer explained that the true blind spot of our time is experience and through the process of U we can come to know experience.

Contributions from Adult Development

Experience or how one makes sense of life can seem quite intangible. However, decades of developmental research have provided framing and conceptualization of the human lived experience. Adding a rich layer of depth to leadership, constructive-development theory extends the psychosocial knowledge by purporting that context is pivotal to understanding individuals (Cook-Greuter, 1999; Kegan, 1982; Torbert, 2004). Here, the individual's construction of meaning is inseparable from the external and

internal factors that contribute to it, making the case for what Kegan refers to as an "embeddual", that humans are all, at all times, individuals embedded in their environment.

Arising from stage-theory, a more linear conceptualization of development, constructionist research has progressively become more prominent in various forms of social sciences, as it acknowledges the inherent tension of environmental and situational factors on human experience. Specifically, constructionist theory permits multi-directional movement in human development. Reality, therefore, is understood as an individual is informed by its environment and their capacity to interpret experience. As individuals grow and develop over time, meaning-making process become increasingly complex and individuals tend to move from pre-conventional to conventional stages of development (Cook-Greuter, 2004; Kegan, 1982; Loevinger, 1976). Less than 5% of the population ever reaches post-conventional development, which is marked by expanding consciousness, heightened cognitive functioning, and deepening awareness of emotions particularly, empathy (Cook-Greuter, 2004; Kegan, 1982). Particular credit is attributed to Kegan's (1982) work, which built upon the earlier developmental theorists like Erikson and Loevinger. With the conceptualized five stages of development through word association, each stage is characterized by a subject-object perspective, as individuals progress, their ability to synthesize this duality more broadly leads to a deepening of consciousness, complex relationships, and moves from more interpersonal to intrapersonal meaning-making experience.

Post-conventional stages of development have held particular interest in the field of leadership studies, as the expansion of human capacity within these stages has also

been correlated with greater leadership effectiveness (Brown, 2012; Kegan, 1994; Rooke & Torbert, 1998; Torbert, 2004). While Kegan's work remains a pillar to the field, Rooke and Torbert (1998, 2005) were the first to theorize how a leader's development translates into organizational success. Later, in collaboration with Cook-Greuter, they were able to empirically develop and test this work with the Leadership Development Framework (LDP) (Torbert, 2004). The LDP places leaders in "action logics", similar to stages of development, by where multiple dimensions of a person's reasoning and behavior are highlighted, illuminating a leader's predominant form of strategy (Torbert, 2004). Now referred to as the Global Leadership Profile (GLP), Torbert has contributed more depth and additional action logic to his work. Including eight action logics, the GLP interprets the assumptions and behavior of individuals.

A study utilizing the GLP and conducted by Brown (2012) revealed that post-conventional leaders, indeed, show novel leadership competencies above and beyond existing frameworks. Specifically, Brown determined that of the 15 competencies post-conventional leaders embody, shared themes of a) deep inner foundation, grounding their work in transpersonal meaning, b) accessing knowledge through non-rational thought, systems thinking and integral or complexity theory, and c) adaptively managing the system through dialogue were connected throughout his findings. While the GLP still remains the only widely tested developmental theory specific for leaders, the lack of definition and construct development surrounding "organizational transformation" and "leadership" has been a point of weakness. Thus, while research suggests that human development is critical to leader development (Getz, 2009; Rooke & Torbert, 1998, 2005), empirical instruments have failed to adequately link these two concepts.

Instrumentation in Leadership

Consistent with the breadth of theories in leadership studies, research methods have been diverse and span a vast array of perspectives. "The sheer number of competing frameworks and theoretical conceptualizations has most certainly narrowed over the last 20 years. However, the fundamental variants among these theories continue to keep the field well divided," (Kroeck, Lowe, & Brown, 2004, p. 72). For this reason, select instruments will be reviewed as pillars of measurement due either to their theoretical contribution or methodological significance.

Guided by popular leadership theories, the Leader Member Exchange Measure (LMX) (Graen & Uhl-Bien, 1955), Leader Behavior Description Questionnaire (LBDQ) (Stogdill & Coons, 1957) and the Leadership Opinion Questionnaire (LOQ) (Fleishman, 1953) took early prominence in the assessment field. Administered by paper and pencil, these self-reports for managers and subordinates focused on how leaders influence followers. Although, leader behaviors had promising predictive success with leadership effectiveness, behavioral descriptions, "were usually obtained from subordinates who had little opportunity to observe their leaders interacting with people outside the work unit," (Yukl, 2012, p.68). Similarly, the Leadership Effectiveness and Attitude Description (LEAD) Questionnaire (Hersey & Blanchard, 1974) utilized only managers' self-reports. Despite this, LEAD and assessments for path-goal theory (House, 1971) and the managerial grid (Blake & Mouton, 1964) indicated that the meta-categories of task-oriented verses relations-oriented behavior impacted leadership effectiveness.

Providing an alternative to single-source assessment, the Leadership Practices Inventory (LPI) (Posner & Kouzes, 1988) is often used as a 360-degree instrument.

Composed of a 30-item questionnaire containing five subscales, one for each of The Five Practices of Exemplary Leadership, the internal reliability for this instrument is fairly strong with a Cronbach's Alpha of over 0.75 (Posner & Kouzes, 1993). And while widely used, this instrument is limited by its theoretical foundation, which does not account for contextual factors and has little breadth of explanatory power with just five behaviors: modeling, inspiring, encouraging, enabling, and challenging.

Related to behavioral assessments in leadership, transformational and transactional leadership theory offered dichotomous descriptors, akin to relations-oriented and task-oriented behavior. Most notable among transformational leadership assessments is the Multifactor Leadership Questionnaire for Research (MLQ) (Avolio & Bass, 2004). Having been revised several times, the MLQ has been tested in over 30 countries and across industries (Bass & Avolio, 1999). Some correlational studies have concluded that there is a relationship between leader effectiveness and the scales of transformational leadership (Atwater & Yammarino, 1989; Bass and Avolio, 1989; Komives, 1991). Though these studies have shown support for the MLQ's utility, others have yielded a wide range of predictive validity coefficients indicating an $r = .77$ (Bass & Avolio, 1989) and on the same scale on another study an $r = .21$ (Bass & Yammarino, 1991). This has been particularly problematic when studies by the same primary researchers employ the same instrument. Due to this variation, Lowe, Kroeck & Sivasubramaniam (1996) cited over 70 published and unpublished studies that utilized the MLQ inquiring into the range of variance on scale items. One of their null hypotheses indicated that there would be no differences among private and public organizations - this hypothesis was rejected. Across organizations there were significant differences between private and public

organizations, namely that public organizations implemented more transformational behaviors.

Rationale for 360 Assessments

It is the vast body of knowledge from which leadership is informed and the rapid growth of the field that has served both as an asset and point of contention in empirical work. For with every new layer of contextual understanding is an equally important yet complex methodological inquiry. This is perhaps best articulated in Dansereau, Alutto, and Yammarino's (1984) book, which first brought clarity to the issues surrounding theory and research in leadership. Namely that leadership theory did not account for the rich levels of analysis present and therefore, inhibited the statistical analysis of theory testing and practical implications. Other major critiques of leadership assessment have included that they rely heavily on one theoretical frame with the intention of promoting that theory and that traditionally they have been limited by self-ratings or subordinate perceptions alone (Yukl, 2012). Although some studies have utilized experimental or quasi-experimental intervention techniques, convenience, time, and cost are all contributing factors to the persistence of survey methods in leadership studies. For this reason, a case for 360 instruments will be reviewed, as they provide the utility of practical application, convenience of survey implementation and add depth to the source of data and levels of analyses.

Though 360-degree feedback tools were used throughout the 1980's, it was Edwards and Ewen's (1996) publication that brought heightened visibility to the 360 instrument by affirming, through their research, that 360 processes were superior for performance evaluation in both reliability and fairness over traditional single-rater tools.

Judge and Cowell (1997) reported that the use of 360 feedback is among the practices of top executive coaches and showed tremendous growth within the 90's. In their studies, Hagberg (1996), Rosti and Shipper (1998), and Shipper and Dillard (2000) showed that 360 feedback was one of the best methods to increase self-awareness in regards to skill sets and competencies. However, 360-degree instruments have predominantly been used for developing individual leaders (Church & Bracken, 1997) or cultural change initiatives (Burke & Jackson, 1991). This, argued Bracken and Church (2013), demonstrates a lack of creativity in utilizing 360 tools and has resulted in unrealized potential.

More recently, organizations are using 360 feedback for understanding performance (3D Group, 2013; Braken & Church, 2013). For example, in a study of more than 200 organizations that employ 360-degree tools, 47% were using them for performance indicators. While there has been hesitation to utilize such tools as they provoke fears of evaluation, decision-making, and fairness (Brett & Atwater, 2001), organizations are increasingly interested in assessing the "how" of effectiveness (Kaiser, McGinnis & Overfield, 2012) and not just the "what" of bottom-lines. Responding to the recognition that engagement and quality of leadership matters in the workplace particularly with diverse demographics, 360 instruments have received heightened attention (Hankin, 2005; Meister & Willyerd, 2010). Following the thread that quality matters, studies have shown that how a 360 instrument is implemented is also critical for its accuracy and how well-received it will be. A learning culture should be founded on open dialogue around the use and delivery of the instrument (Blanchard and Thacker 2007; Hensel, Meijers, van der Leeden, & Kessels, 2010). Further, to guard against inaccurate ratings, Hensel et al. (2010) found that at least six peer raters are needed to

reach a correlation above 0.45. While ten raters are ideal, it can be unrealistic for small to medium size organizations to be able to reach such numbers.

Literature Summary

As conceptual understandings in leadership have progressed, theory has moved from focusing on the individual characteristics (Munsterburg, 1913; Stogdill, 1948), behaviors (Kahn & Katz, 1953; Lewin, Lippitt, & White, 1939; Stogdill & Coons, 1957), and the situational responsiveness (Hersey & Blanchard, 1969; Fiedler, 1978; House, 1971; Vroom & Jago, 1978) of leaders to moral pillars of service (Greenleaf, 1977), conditions of relationships (Dansereau, Graen, & Haga, 1975), and processes of transformation (Bass, 1998; Burns, 1978) between leaders and followers. Increasingly, leadership literature has incorporated aspects of adaptability and change not simply as abstract processes but as potentials available to all individuals, emphasizing that leadership is not predetermined and in fact can be learned, developed, and furthered.

More recent conceptualizations of organizational leadership theories share similar themes of transformation and change (Scharmer, 2007; Senge, 1990; Wheatley, 1999). However, borrowing from GST (von Bertalanffy, 1968), organizational leadership theory also takes into consideration feedback from the system or environment. Feedback information occurs between organizations and the larger system (or even within the organization) in terms of resources or other forms of capital and within GST is often referred to as energy. Leaders' ability to interpret such feedback and collaborate with others towards new directions depends largely on several abstract processes that have been referred to as systems thinking and awareness. For example, leaders ability to engage with systems awareness may be informed by their capacity for change mastery

(Senge, 1990) or willingness to be open at that present moment to experience and possibility (Scharmer, 2007).

However, systems awareness may represent, to a high-degree, pronounced cognitive, social, and emotional functioning. Informed by theories of human development, individuals' ability to reconcile personal experience for an integrated worldview of how they are within and, at the same time, apart of the system denotes post-conventional or advanced levels of development (Cook-Greuter, 2004; Kegan, 1982; Loevinger, 1976; Torbert, 2004). For this reason, acknowledging leadership theory without consideration to human development is amiss.

As leadership assessment attempts to further understandings of leadership, it is paramount that multiple theories are considered. Conceptual acknowledgement has supported different ways of leading but has done little to consider such measures across context at both the individual and organizational level (Dansereau, Alutto, & Yammarino, 1984; Yukl, 2012). Further, since assessment in leadership has been limited by cost, convenience, and accessibility, surveys have largely dominated the field and several studies support that 360-degree instruments are considered a best practice in survey methods and leadership development (Edwards & Ewen, 1996; Hagberg, 1996; Judge & Cowell, 1997; Rosti & Shipper, 1998; Shipper & Dillard, 2000).

Thus, in accordance with the literature, this study seeks to explore how leadership varies across industries, organizations, and individuals with data from an existing 360-degree instrument, TLCP. Selection of TLCP proved to be consistent with observing multiple leadership competencies while simultaneously taking human development into

consideration. Further, the rationale, validity, and reliability of TLCP are discussed in the next chapter as is MLM, the methodology that guided this study.

CHAPTER THREE

METHODOLOGY

Addressed within this chapter are the processes enlisted to answer this study's research questions. Background to TLCP is provided, including external validity and reliability reports as well as sample demographics. Following this overview, procedures of data treatment are detailed. This chapter concludes with an explanation of empirical models for relevant multi-level modeling (MLM) and this study's design.

Overview of The Leadership Circle Profile (TLCP)

The theoretical foundation for TLCP borrows from the psychology, leadership, and adult development literatures to form a competency-based 360-degree instrument. The Leadership Circle Profile is an online-based questionnaire that contains 29 dimensions corresponding to eight summary dimensions. Summary dimensions are meta-categories combining specified items or dimensions. Of the 29 dimensions, 18 leadership competencies and 11 internal assumptions account for outcome variables. In this way, TLCP assesses both behaviors and beliefs and was the first 360 assessment in leadership to highlight cognitive assumptions that underlie behavior (Anderson, 2006). These competencies are depicted in list format in Table 1 below. All items are scale items, ranging from 1 to 5, with 5 indicating the strongest demonstration of each item.

As part of the instrument and theoretical design, outcome variables are depicted in a circular graph (See Figure 1) in percentile scores. This is done to highlight the behavioral polarities present. Specifically, dimensions that are displayed across from one another have opposite internal assumptions. For example, Authenticity is opposite Protecting. Four additional outcome variables: Creative, Reactive, Task, and Relationship

are calculated from means in corresponding dimensions and presented in a scale score. The top half of the circle, Creative, correlates to Kegan's and Susan Cook-Greuter's stage four, while the bottom half of the circle, Reactive, is correlated to stage three. Only these stages are represented in the circle since less than 1% of the population can achieve level five, adulthood is marked by level three, and almost all leadership theory is written for level four with the aspiration of obtaining one's higher-self (Anderson, 2006). The left and right halves of the circle are labeled Relationship and Task respectively, representing the emphasis of an individual's orientation towards behaviors in these dimensions. The last outcome variable is leadership effectiveness located on the bottom outside of the circle.

The Leadership Circle Profile (TLCP) proved to be a particularly valuable instrument in this study for several reasons. First, it is the only survey tool that correlates leadership competencies with developmental stages. The top and bottom half of the circle represents some of the foremost work of developmental theory and places emphasis on adult stages of development which appropriately correspond to competencies represented in the population and leadership literature. Additionally, it covers a breadth of leadership theories. For example, the dimension of Self-Awareness informed by the work of Goleman (1995) and the Systems Awareness dimension is modeled from Senge's (1990) work. The range of applicable leadership theory is representative of the possible ways and styles of leadership one might choose to engage. Further, these competencies are portrayed as a spectrum in percentile scores. In this way, individuals are informed about their tendencies and inclinations and can see their own variability. Lastly, as a widely used instrument, TLCP provided a rich reliable and valid foundation for

assessment. Normed from a base of over 3,000 self-assessments and 30,000 feedback-assessments, TLCP has reached a vast range of leaders, shows impressive correlations to business performance indexes and been externally validated (Anderson, 2006).

Table 1

TLCP Dimension Variables

Summary Dimensions	**Dimensions (Items)**
Relating	Caring Connection Fosters Team Play Collaborator Mentoring & Developing Interpersonal Intelligence
Self Awareness	Selfless Leader Balance Composure Personal Learner
Authenticity	Integrity Courageous Authenticity
Systems Awareness	Community Concern Sustainable Productivity Systems Thinker
Achieving	Strategic Focus Purposeful Visionary Achieves Results Decisiveness
Controlling	Autocratic Ambition Driven Perfect
Protecting	Distance Critical Arrogance
Complying	Conservative Pleasing Belonging Passive

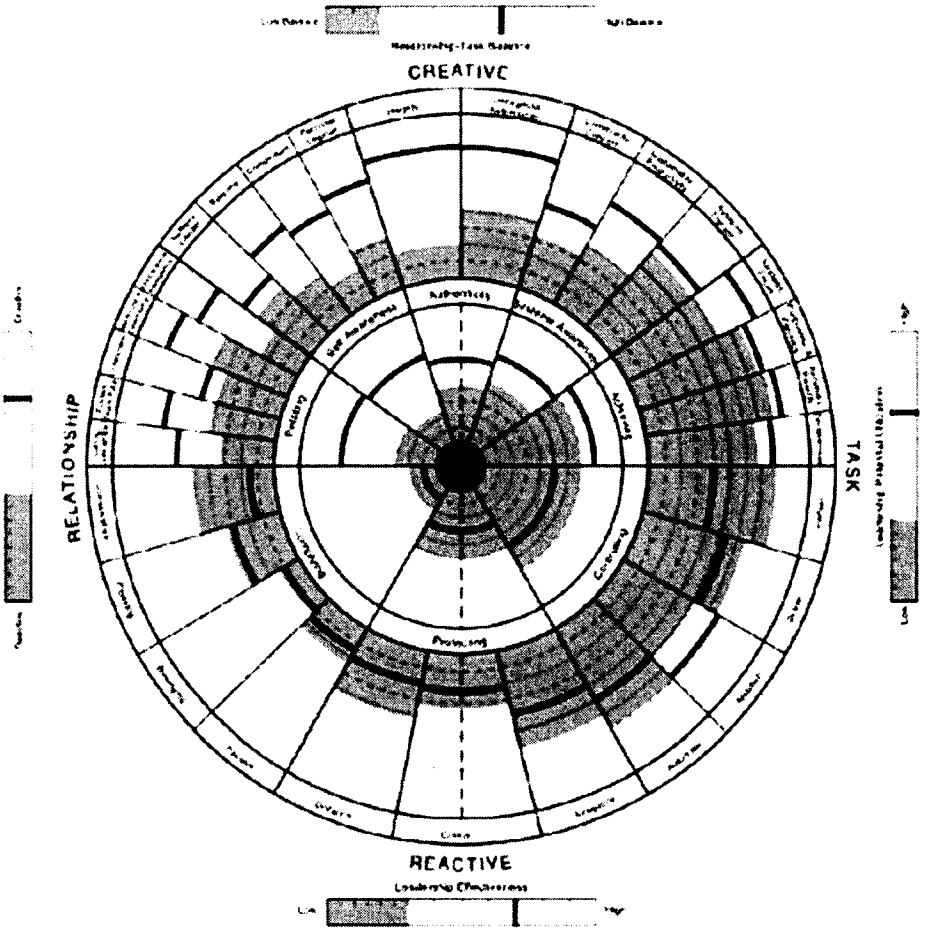

Figure 1. TLCP Dimension Graphic. Adapted with permission from The Leadership Circle Profile™.

TLCP Reliability & Validity

In 2008, the Institute of Psychological Research (IPRA) conducted an independent, unbiased psychometric research study, investigating the reliability and validity of TLCP.

Reliability, in general, refers to the extent in which an instrument is consistent and dependable (Vogt, 2006). When reliability is understood through internal consistency, coefficient alphas can be interpreted to assess the strength of intercorrelation among scale items (Nunnally & Bernstein, 1994). In this case, split-half reliability was used to test the

internal consistency of each subscale and indicated favorable results with a mean coefficient alpha of .89 and a range of .83 to .96. The outer dimensions of TLCP also had strong alpha coefficients greater than .70 with the exception of Conservative and Balance that had an alpha coefficient of .64. It was suggested by the external researchers that additional items be added to this scale as some dimension elements had as many as nine items, Conservative and Balance had two and three items respectively. It is important to note that this modification has not yet been implemented.

Additionally, validity analysis, which assesses the degree that an instrument measures its intended construct (Nunnally & Bernstein, 1994), was also conducted. Specifically, criterion validity was used in order to test TLCP predicted outcomes (Murphy & Davidshofer, 1991). Self-reported scores were omitted from such analyses as previous research indicates that these reports inflate correlation coefficients or can have halo effects (Bretz, Milkovich, & Read, 1992). Further, since the sample size ranged from 15,145 to 86,298 and was particularly large, the percent of shared variance was interpreted rather than p values to avoid interpreting statistically significant values as practically important. Findings demonstrated that Leadership Effectiveness was significantly and positively correlated with five Creative dimensions: Relating, Self-Awareness, Authenticity, Systems Awareness, and Achieving with a range of $r = 0.77$ to $r = 0.89$, and negatively correlated with Reactive dimensions (ranging from $r = -0.14$ to $r = -0.59$). Weighted scores in the eight dimensions did not impact the criterion validity.

TLCP Sample

The sample for this study included 246,645 records from TLCP, which have been collected from the years of 2000 – 2010. This represented over 19,000 individuals and

their respective raters. Participants included managers, leaders, and executives who have opted to take the TLCP for feedback, learning, or development purposes. While it is not possible to distinguish among these three categories of individuals, several sample demographics are known. Specifically, 59% of the sample was male, 40% were female and 1% wished not to disclose. Although this is an international sample, 69% were from the United States, 13% were from South Africa, 4% were from Australia, 3% from Canada, 1% were from India, and the remaining 10% were accounted for by 120 countries, making this a predominantly Western-based sample. Additionally, the sample was also predominantly Caucasian (68%) with 6% identified as Asian or Pacific Islander, 6% as black, and 3% as Hispanic or from Latin America. Thirteen percent of the sample did not report their ethnic identity and 4% identified as Other. What remained a distinctive characteristic of this data set was the robustness of industries present. Over 30 industries were represented and can be viewed in Appendix B. Industry, however, was a consultant-inputted variable, meaning that individuals do not self-select or enter their industry into the database; rather, a TLCP consultant gathered such information from the client. Additional demographic variables included: age, educational level, management level, number of direct reports, and relationship (denoting relationship to individual rated).

Data Treatment

Data Collection

Being an independent organization, the TLCP data has been privately maintained and remains the property of The Leadership Circle™. Permission to use the instrument was granted by The Leadership Circle™, a formal letter of consent is attached in

Appendix A. The approval of this research and appropriate adherence to the Institutional Review Board (IRB) guidelines is also provided on the final page of this document. To ensure the confidentiality of participants, identifiable information, such as client names, organizational names, and contact information, was removed from all data records prior to transfer. Participants were not notified via consent of this research, as this was an archival data, and notification, may have adversely impact participants' anonymity. The participants' unique identification number was used to distinguish all data records; such numbers cannot be linked to individuals' personal information, as this study's researcher did not have access to the key. Instead, these unique identification numbers helped decipher raters from participants for analyses purposes. A single data file was provided electronically from The Leadership Circle to this study's researcher. All computers and accounts that have access to this data were password protected and privately owned. Concern for data mismanagement was minimal, particularly, as confidential information was removed prior to transfer.

Study Sample

The Statistical Package for the Social Sciences (SPSS), a computer-based program specializing in performing analysis was utilized in this study. Preliminary analyses were conducted on the data sample to indicate the appropriateness of variables and cases for selection. Two major concerns drove the preliminary investigation: a) the number of raters for participants and b) the number of participants within organizations and industries. Following the caution offered by Hensel et al. (2010) that too few raters can lead to biased results, a conservative minimum of eight raters was required for participant inclusion. In order to conduct such computation, the data sample was split

separating self-scores from rater scores and restructured. After tabulating raters, data was remerged and cases containing eight raters or higher were retained. Additionally, as the predominant method of analysis was MLM, considerations for second-level units required a minimum of 15 categories with at least 50 first-level measurements. Said differently, it was specified that records for inclusion were industries and organizations that contained at least 50 participants. Thus from the original sample, 6,743 individuals from 54 organizations and 15 industries were retained.

Dependent Variables

Leadership Effectiveness. Leadership effectiveness was one of the dependent variables in this study. Within TLCP, leadership effectiveness exists as a weighted scale score. Five items comprise leadership effectiveness and were either the participant's or raters' perception of the following:

- I am satisfied with the quality of leadership that he/she provides.
- He/she is the kind of leader that others should aspire to become.
- He/she is an example of an ideal leader.
- His/her leadership helps this organization to thrive.
- Overall, he/she provides very effective leadership.

Since each rater contributed a unique leadership effectiveness score to each participant, approximately six to 30 scores on average existed for each participant. Three variable types were developed for leadership effectiveness: a) an aggregated mean score of self and other ratings b) an aggregated score of other ratings and c) a distance ratio that reflected the difference between mean scores of self and others. The aggregated mean score of others' leadership effectiveness ratings was the predominant dependent variable as determined by the intra-class correlation coefficient (ICC), whereas, the distance ratio was used in some circumstances as an independent variable or predictor.

Systems Awareness. Systems awareness was the second dependent variable explored in this study. Also, a weighted scale score, systems awareness was a summary dimension of three competencies and their respective items:

Community Concern

- I create vision that goes beyond the organization to include making a positive impact on the world.
- I attend to the long-term impact of strategic decision on the community.
- I balance community welfare with short-term profitability.
- I live an ethic of service to others and the world.
- I stress the role of the organization as corporate citizen.

Sustainable Productivity

- I balance bottom line results with other organizational goals.
- I allocate resources appropriately so as not to use people up.
- I balance short-term results with long-term organizational health.

Systems Thinker

- I reduce activities that waste resources.
- I redesign the system to solve multiple problems simultaneously.
- I evolve organizational systems until they produce envisioned results.

Due to the nature of this summary dimension as a scale score, a mean aggregated variable was also computed for use in analysis. Similar to leadership effectiveness, the ICC was higher when others' ratings of systems awareness were calculated as the dependent variable in contrast to utilizing either a mean aggregate of self and other ratings or a distance ratio. Thus, the higher ICC denoted more variability and allowed for models to explain more variance.

Other Variables

Also within the data set were the demographic variables of age, gender, ethnicity, educational level, management level and number of reports for first level-predictors. In order to guard against multicollinearity, age and number of reports were mean centered. Educational level and management level were transformed to enhance interpretation so

that higher-level categories corresponded to increased value or higher levels of achievement. For example, high school was coded as one, associate's as two, and so on. Gender was represented as a dummy variable and coded as one for females and zero for males. And while ethnicity was also dummied to represent diverse individuals (those that did not identify as White) as one and White as zero, a dummy variable for each individual ethnicity was also created.

Second-level variables were only created for organizational analysis, as industry analysis was not warranted. Categories included: diverse organizations, female organizations, higher education, and industry. Diverse organizations were coded as one if their organization was comprised of at least 20% racial minorities. For female organizations, one was assigned to organizations where the gender ratio was female-dominant and in the case of higher education, one was assigned to organizations who more predominantly displayed graduate or higher levels of education. Fifteen industry sectors were included as second-level predictors and a dummy variable was created for each. The three variables, diverse organizations, female organizations, and higher education were derived from first-level predictors. While it was possible, that individuals within this sample do not represent their organizations on the whole, the requirement that each organization maintained at least 50 respective participants minimized this chance. Further, while some researchers have warned against advancing first-level predictors to second-level criterion (George, 1990), more recent studies have demonstrated that it is relatively common practice (James, Demaree, & Wolf, 1993; Langfred, 2000) when group members have sufficiently similar responses for aggregation.

Data Analysis

Multi-level modeling was used to address the research questions of this study. While descriptive statistics outlined the parameters of TLCP data set (answering research question 1), MLM provided an appropriate analytical technique, building upon multiple linear regression (Tabachnick & Fidell, 2006), but with the added advantage of considering both within-group variance and between-group variance simultaneously (responding to the remaining research questions). Since the leadership of organizations involves natural hierarchies or systems within systems, MLM enabled the analysis of nested phenomena. Specifically, leadership effectiveness and systems awareness were examined as they varied among participants (level-one) and across industries (level-two). Multi-level modeling was particularly helpful in this study as it assumes randomization of coefficients and therefore does not assume independence of errors. Such methodology is especially useful when analyzing phenomena that are highly correlated. Conceptually, MLM treats the estimated regression coefficients at the first level of analysis as the dependent variables at the second level of analysis. In other words, MLM is helpful in studies like this one where, it was likely that participants (level-one) are closely related to other participants within the same industry or organization (level-two). Moreover, sample sizes are able to vary across levels (Tabachnick & Fidell, 2006), which is a regular characteristic of nested data.

Missing Data

Prior to conducting the MLM analyses, a process for handling missing data was addressed. If there had been considerable amounts of missing data, it could have potentially led to biased results or the inability to conduct analysis in SPSS. Simply

stated, there are two types of missing data, missing at random (MAR) and missing not at random (MCAR). Proper treatment of missing values requires familiarity with the data set and educated estimates as to why such data is missing (Heck, Scott, & Tabata, 2010). In this study, some demographic categories were determined to be MAR, as estimates indicated less than 5-8% of such data was missing. In such cases, individuals were retained since inputting demographic categories was inappropriate and since MLM can still process models with missing values. In the instances where competency scores were missing and variables were scale scores, data values were assigned by means of multiple imputation of plausible values or full maximum likelihood estimation (Rubin, 1987). Full maximum likelihood assumes normal distribution of the dependent variable, thus this specification was confirmed through analysis in SPSS.

Empirical Models

To answer this study's research questions, multi-level testing was conducted employing four different models when appropriate: intercepts-only, random-coefficient, means-as-outcomes, and intercepts and slopes.

The null hypothesis offered that predicting variables at the first and second levels of analysis would not have an impact on the variance between individuals, organizations and industries, and thus, not significantly improve model fit.

Intercepts-Only Model

Prior to implementing the cross-level analysis, an intercepts-only model with Random Effects (or one-way analysis of variance (ANOVA)) was conducted. The intercepts-only model serves as a valuable first step to assess the variance in the dependent variable (leadership effectiveness or systems awareness) present at each

potential level of analysis, thereby evaluating the appropriateness of MLM for the data. The mathematical equation for this was:

$Y_{ij} = \gamma_{00} + u_{0j} + r_{ij}$

Where

γ_{00} = the unweighted grand mean of leadership effectiveness (or systems awareness) across all industries (or organizations)

u_{0j} = how an industry's (or organization's) average leadership effectiveness (or systems awareness) score differs from the leadership effectiveness (or systems awareness) grand mean for all industries (or organizations)

r_{ij} = how a participant in a given industry (or organization) differs from his/her industry's (or organization's) mean on leadership effectiveness (or systems awareness)

In addition, terms from the intercepts-only model were used to compute an intraclass correlation coefficient (ICC), which indicates the amount of between- and within- industry variance in the data that can be potentially explained (Raudenbush & Bryk, 2002). The ICC was computed using the equation:

$p = \tau_{00} / (\tau_{00} + \sigma^2)$

Where

τ_{00} = the variance between industries (or organizations) around the grand mean of leadership effectiveness (or systems awareness)

σ^2 = the variance between individuals around the grand mean of leadership effectiveness (or systems awareness)

Squaring the ICC term provided the percent of variance in dependent variables among industries or organizations: the remaining percentage was attributed to variance at the participant level. This model alone could not answer the research questions of this study, as it does not specify which variables are likely causing the variation in dependent

variables. However, it was a necessary step in order to ascertain if variation does exist and if so, how much variation exists across levels.

Random-Coefficients Regression Model

For the second stage of analysis, a random-coefficients regression model was used to analyze intercept and slope parameter variability across industries. Level-one (participant) predictor variables were run in each model. Examples of such variables included: ethnicity, gender, age, number of direct reports, educational level, and management level. These independent variables were allowed to vary randomly over the population of industries or organizations. Specifically, the following equation was used for each model:

$$Y_{ij} = \gamma_{00} + \gamma_{10}X_{ij} + u_{0j} + u_{1j}X_{ij} + r_{ij}$$

Where

γ_{00} = the unweighted grand mean of leadership effectiveness (or systems awareness) score for industries (or organizations) when level-one predictors is zero

γ_{10} = the unweighted average of slopes for level-one predictors across industries (or organizations)

X_{ij} = the level-one predictor of leadership effectiveness (or systems awareness)

u_{0j} = variance of mean leadership effectiveness (or systems awareness) score for industries (or organizations) compared to the leadership effectiveness (or systems awareness) grand mean after level-one predictors have been accounted for

u_{1j} = variance in industries' (or organizations') slopes (the relationship between participants' dependent variable score – level-one predictors) in comparison to the average overall industry (or organization) slope

r_{ij} = how a participant in a given industry (or organization) differs from his/her industry's (or organization) mean on leadership effectiveness (or systems awareness), when the level-one predictors are accounted for

Means-As-Outcomes

The third stage of analysis was only pursued in models that explored the relationship of systems awareness as it varied across participants and organizations. The purpose of this model was to examine predictors at the second-level of analysis. Second-level variables included: diverse organizations, female organizations, higher education and specific industries. The following equation was utilized:

$Y_{ij} = \gamma_{00} + \gamma_{01} W_j + u_{0j} + r_{ij}$

Where

γ_{00} = the unweighted grand mean of systems awareness across all organizations

γ_{01} = the average of slopes for level-two predictors across organizations

W_j = the level-two predictor of leadership effectiveness (or systems awareness)

u_{0j} = variance in organizations' slopes (the relationship between participants' dependent variable score – level-two predictors) in comparison to the average overall organization slope

r_{ij} = how a participant in a given organization differs from his/her organization's mean on systems awareness, when the level-two predictors are accounted for

Intercepts and Slopes

The final stage of analysis offered both random slopes and intercepts across organizations. Grounded in the premise that context matters, the final model provided predictors the ability to fluctuate in different contexts. For this reason, this model offers the most realistic simulation but is increasingly complex to interpret. Both first (ethnicity, gender, age, number of direct reports, educational level, and management level) and second-level predictors (diverse organizations, female organizations, higher education and specific industries) were introduced in this model and utilized the following equation:

$$Y_{ij} = \gamma_{00} + \gamma_{01}W_j + \gamma_{10}X_{ij} + u_{0j} + u_{1j}X_{ij} + r_{ij}$$

Where

γ_{00} = unweighted grand mean for systems awareness for organizations, when all predictors are zero

γ_{01} = the average slope predicting systems awareness with the organization-level predictor (Diverse Orgs, Female Orgs, Higher Ed, Industry) across all organizations, when the participant-level demographics are taken into account.

W_j = the level-two predictor of leadership effectiveness (or systems awareness)

X_{ij} = the level-one predictor of leadership effectiveness (or systems awareness)

u_{0j} = variance of mean systems awareness scores for organizations (compared to the grand mean) after all predictors have been accounted for

γ_{10} = average slope of participant-level demographics – overall systems awareness score, when the organization-level predictors (Diverse Orgs, Female Orgs, Higher Ed, Industry) are taken into account.

γ_{11} = average slope of participant-level demographics as the variable interacts with the organization-level predictors (Diverse Orgs, Female Orgs, Higher Ed, Industry) in terms of systems.

u_{1j} = the variance in participant-level demographics – overall systems awareness score (compared to the average slope for all organizations), when the organization-level predictors (Diverse Orgs, Female Orgs, Higher Ed, Industry) are taken into account.

r_{ij} = how a participant in a given organization differs from his/her organization's mean on systems awareness, when the first and second-level predictors are accounted for

CHAPTER FOUR

INDUSTRY-LEVEL FINDINGS

The intention of this study was to investigate patterns of leadership competencies and assess the variance of leadership effectiveness across contexts. Archival data from the Leadership Circle Profile's (TLCP) 360-degree instrument was utilized in order to perform the quantitative analysis necessary to answer this study's research questions. Both descriptive and inferential statistics were explored and specifically, multi-level modeling (MLM) analyses were conducted. This chapter reports and is guided by the results of the first four research questions. It is important to note that all tables and appendices referencing the results of this study are reported to the thousandths place. This was done since standard deviations and variance terms were particularly narrow due to a five-point scale and in some circumstances justified interpreting and reporting the thousandths place, which enhanced the precision of measurement and maintained consistency throughout the study's findings.

Research Question 1: Demographics Across Industries

The original data sample from TLCP included 246,645 records across the years of 2000-2010. These records represented ratings for over 19,000 individuals and were transformed into a single case for each individual rated. As discussed previously detailed, 6,743 of the cases were retained for this study after meeting specified parameters (see Chapter 3). This included 56 organizations across 15 industries.

To further investigate sample differences and similarities, descriptive analysis included mean and percentage counts for the sample as well as within distinct industries. The average age of participants was 43. Ethnic representation was as follows: 78.4%

White, 7.1% Black, 5.7% Asian, 3.8% Other, 2.7% Hispanic, 2.2% preferred not to answer and less than 1% identified as Native American. Fifty-nine percent of the sample was male and 41% were female. Education was also included in the demographic analysis and participants reported their highest level of completion as follows: 33.2% masters, 31.9% undergraduate, 15.1% some graduate, 9.3% doctorate, 4.8% some college, 3.6% associates, 2.1% high school. Contained within Appendix C are detailed tables of demographics variables across industries. Below, presented in Table 2, are the industries as they relate to mean competency scores of summary dimensions in the TLCP. Of particular note, LE's range: 3.710-4.188, where mean highest LE score is Healthcare.

Table 2

Industry Mean Competency Scores

		Relating		Self Awareness		Authenticity	
Industry	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Consulting	721	4.203	.344	4.102	.282	4.2784	.249
Education	2276	4.0263	.336	3.384	.281	4.1774	.245
Financial	50	4.078	.347	3.969	.319	4.0948	.261
Government	361	3.9264	.363	3.908	.306	4.100	.252
Manufacturing	315	3.7934	.333	3.805	.292	4.0374	.256
Telecommunications	66	3.979	.379	3.987	.299	4.149	.233
Military	191	3.836	.308	3.885	.276	4.1571	.274
Healthcare	1465	4.094	.346	4.058	.286	4.2343	.251
NonProfit	130	4.055	.304	3.997	.265	4.2069	.258
Energy	778	3.879	.335	3.884	.277	4.1048	.269
Service	73	4.120	.379	4.038	.341	4.2938	.249
Restaurant	160	3.901	.315	3.889	.244	4.1017	.227
Insurance	50	3.942	.282	3.920	.211	4.1164	.218
Conglomerate	57	3.605	.344	3.700	.260	3.9182	.242
Global Leadership	50	3.875	.364	3.887	.273	4.200	.239

Table 2 *Continued*

Industry Mean Competency Scores

Industry	*n*	Systems Awareness		Achieving		Leadership Effectiveness	
		M	*SD*	*M*	*SD*	*M*	*SD*
Consulting	721	3.988	.293	4.193	.271	4.172	.361
Education	2276	3.885	.297	4.158	.271	4.093	.372
Financial	50	3.832	.326	4.071	.332	4.067	.391
Government	361	3.857	.292	4.049	.296	3.979	.393
Manufacturing	315	3.706	.277	3.991	.293	3.894	.374
Telecommunications	66	3.945	.286	4.123	.285	4.047	.401
Military	191	3.801	.284	4.014	.293	3.927	.338
Healthcare	1465	4.013	.271	4.217	.271	4.188	.363
NonProfit	130	4.041	.268	4.207	.248	4.185	.310
Energy	778	3.724	.289	4.035	.295	3.969	.380
Service	73	3.972	.348	4.228	.282	4.161	.396
Restaurant	160	3.791	.253	4.037	.293	3.949	.381
Insurance	50	3.701	.252	4.060	.246	3.971	.313
Conglomerate	57	3.590	.213	3.862	.218	3.710	.379
Global Leadership	50	3.752	.266	4.161	.248	4.060	.373

Table 2 *Continued*

Industry Mean Competency Scores

		Controlling		Protecting		Complying	
Industry	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Consulting	721	2.236	.409	1.836	.342	2.097	.259
Education	2276	2.420	.440	1.885	.387	2.148	.264
Financial	50	2.549	.330	1.895	.319	2.032	.263
Government	361	2.325	.439	1.882	.405	2.183	.276
Manufacturing	315	2.638	.424	2.084	.388	2.237	.273
Telecommunications	66	2.336	.374	1.817	.332	2.138	.223
Military	191	2.340	.400	1.948	.357	2.145	.303
Healthcare	1465	2.231	.402	1.759	.362	2.075	.248
NonProfit	130	2.219	.338	1.797	.325	2.080	.236
Energy	778	2.511	.399	1.384	.359	2.225	.282
Service	73	2.373	.493	1.807	.391	2.077	.244
Restaurant	160	2.450	.383	1.969	.340	2.212	.258
Insurance	50	2.377	.366	1.846	.335	2.146	.225
Conglomerate	57	2.743	.370	2.256	.395	2.308	.201
Global Leadership	50	2.773	.441	2.149	.395	2.154	.282

A one-way ANOVA was conducted on industries as they related to TLCP eight summary dimensions and leadership effectiveness. The results indicated that there were significant differences between industries on all eight summary dimensions [Relating: $F(14, 6728)= 54.475$, $p<0.001$; Self Awareness: $F(14, 6728)= 41.847$, $p<0.001$; Authenticity: $F(14, 6728)= 35.274$, $p<0.001$; Systems Awareness: $F(14, 6728)= 66.253$, $p<0.001$; Achieving: $F(14, 6728)= 37.932$, $p<0.001$; Controlling: $F(14, 6728)= 44.029$, $p<0.001$; Protecting: $F(14, 6728)= 31.053$, $p<0.001$; Complying: $F(14, 6728)= 22.053$, $p<0.001$]; and Leadership Effectiveness: $F(14, 6743)=34.132$, $p<.001$. While such results appear suggestive, it was determined that post-hoc testing and ANOVA could not

appropriately account for the variance across industries and that multi-level analysis would provide richer explanatory power.

Research Question 2: Leadership Effectiveness Across Industry

Given that leadership effectiveness was constructed in several ways: mean aggregate of leadership effectiveness for others', mean aggregate of leadership effectiveness for self and others' scores, and distance between self and others' leadership effectiveness scores (see Chapter 3 for variable construction), calculations for the ICC were conducted to determine the best model to explain variance across levels of individual and industry data. Employing the equation ICC = τ_{00} /(τ_{00} +σ^2) the mean aggregate of leadership effectiveness for others' yielded ICC=0.093, mean aggregate of leadership effectiveness for self and others' scores yielded ICC=0.062, and distance between self and others' leadership effectiveness scores yielded ICC=0.046. Converted to percentages, the ICC indicates the amount of between- and within-industry variance that can be potentially explained.

The mean aggregate of leadership effectiveness for other's scores indicated the highest percentage of second-level variance (9.3%, $p<0.001$). Suggesting that, after accounting for individual differences in leadership effectiveness, 9.3% of the variance lies between industry differences. This is a modest variance percentage, as 86.7% remained between individuals. Given that, while modest, some variance does exist at the industry-level, this model was retained as it appropriately accounts for such variance when considering other predictors. Put simply, continuing analysis in multi-level modeling was a more appropriate technique to investigate individual-level factors as they

pertain to leadership effectiveness than other statistical tests (like ANOVA or multiple regression) as 9.3% of the industry variance is controlled.

Table 3 contains the results of the intercepts only model. The intercepts only model is a null model, which examined variance at both the first and second levels without predictors present. Model fit was indicated by the -2 Log Likelihood χ^2=5,760.76, p<.001. The expectation is that as variance is explained, the χ^2 term will decrease in value, showing model improvement. The overall industry mean for leadership effectiveness was reported b=4.026 with a random effect of b=.014, p=.006 across industries.

Table 3

Industry Intercepts Only Model on Leadership Effectiveness

Fixed effect	Coefficient	*se*	*t Ratio*	*p Value*	
Grand mean, γ_{00}	4.026	.032	124.658	<.001	
Random effect	**Variance**	***se***	**Wald Z**	***p Value***	χ^2
					5,760.761
Level-1 effect, r_{ij}	.137	.002	57.999	<.001	
Industry mean, u_{0j}	.014	.006	2.515	.006	

Research Question 3: Individual Influences on Leadership Effectiveness

To answer the third research question, a random-coefficients regression model was utilized. The random coefficient model investigated the influence of a level-one predictor on the dependent variable across a second level. In this study, this analysis answered how level-one predictors like demographics influenced leadership effectiveness across industries.

Initially, demographic variables included: White, Black, Hispanic, Asian, Other, prefer not to disclose ethnicity, gender, age, educational level, management level, and number of reports. The variables: Other, prefer not to disclose ethnicity, age, and number of reports did not converge in analysis. Indicating that either a) the numbers in respective variables were too low as industry was considered or that b) the distribution of cases across their respective variable categories did not meet the assumptions of normality required. Therefore, age and new reports were omitted from this model and Diverse Individuals was created as an overarching category to include all those that identified as other than White/Caucasian. Analysis preceded as each variable (White, Black, Hispanic, Asian, Diverse Individuals, gender, educational level, and management level) was entered into the random-coefficient separately. As is often the case, first-level variables change as they come into relationship with one another. However, building them directly into complex models without first assessing their characteristics can result in biased results (Tabachnick & Fidell, 2007). This is particularly prevalent in more complex multi-level models where decisions must be made in terms of treatment for fixed and random effects. As such, Hox (2002) recommended allowing predictors to separately vary randomly over intercepts and slopes to inform model construction.

Table 4 provides a summary for the fixed effects of five of the eight different models that were examined. The unweighted grand mean and slopes of leadership effectiveness when, the predictors, diverse individuals, White, Black, Hispanic/Latino, and Asian are each constrained to zero are depicted. While there is a negative relationship for leadership effectiveness with Black (b=-.009) and Asian (b=-.001), none of the slope terms were significant as shown by p values of greater than .05.

Table 4

Industry Random-Coefficient Fixed Effects for Ethnicity on Leadership Effectiveness

	Coefficient	*se*	*t Ratio*	*p Value*
Diverse Individuals				
Grand mean, γ_{00}	4.012	.043	92.560	92.560
Slope, γ_{10}	.019	.022	.871	.871
White				
Grand mean, γ_{00}	4.008	.037	109.271	<.001
Slope, γ_{10}	.024	.021	1.148	.272
Black				
Grand mean, γ_{00}	4.027	.031	127.117	<.001
Slope, γ_{10}	-.009	.033	-.268	.796
Hispanic/Latino				
Grand mean, γ_{00}	4.026	.032	125.898	<.001
Slope, γ_{10}	.003	.042	.069	.948
Asian				
Grand mean, γ_{00}	4.027	.032	125.712	<.001
Slope, γ_{10}	-.001	.028	-.017	.987

Fixed effects for other criterion variables are depicted in Table 5. Consistent with findings from ethnicity, slope terms in fixed effects for all other variables were also not significant when entered into models separately. However, interpretation became richer for both the intercept and slope terms after consulting the random effects of each model.

Table 5

Industry Random-Coefficient Fixed Effects for Other Variables on Leadership Effectiveness

	Coefficient	*se*	*t Ratio*	*p Value*
Gender				
Grand mean, γ_{00}	4.003	.025	157.100	<.001
Slope, γ_{10}	.030	.023	1.320	.215
Education Level				
Grand mean, γ_{00}	3.989	.034	116.217	<.001
Slope, γ_{10}	.016	.009	1.772	.123
Management Level				
Grand mean, γ_{00}	3.964	.045	87.249	<.001
Slope, γ_{10}	.013	.006	2.124	.067

The random effects for this analysis tested whether or not each industry's relationship (slope) between leadership effectiveness and each demographic category varied significantly compared to the average leadership effectiveness and demographic category relationship (slope) for all industries. Table 6 illustrates the output summary for the five ethnicity models. All ethnicity models showed improvement from the intercepts only model. However, not all models were statistically significant. Diverse individuals showed the best model fit followed by White, Black, Hispanic/Latino, and Asian respectfully $\chi^2(3)$= 5,760.761-5,017.505=743.256, p<.001; 5,760.761-5,741.072=19.689, p<.001; 5,760.761-5,748.489=12.272, p<.010; 5,760.761-5,757.513=3.248, p>.050; 5,760.761-5,758.093=2.668, p>.050.

Table 6

Industry Random-Coefficient Random Effects for Ethnicity on Leadership Effectiveness

	Variance	*se*	Wald Z	*p Value*	χ^2
Diverse Individuals					5,017.505
Level-1 effect, r_{ij}	.133	54.911	54.911	<.001	
Industry mean, u_{0j}	.024	2.293	2.293	.011	
Covariance, u_{10}	-.006	-1.444	-1.444	.149	
Slope, u_{1j}	.003	1.496	1.496	.067	
White					5,741.072
Level-1 effect, r_{ij}	.136	.002	57.964	<.001	
Industry mean, u_{0j}	.017	.008	2.179	.014	
Covariance, u_{10}	-.002	.003	-.701	.484	
Slope, u_{1j}	.003	.002	1.514	.130	
Black					5,748.489
Level-1 effect, r_{ij}	.136	.002	57.945	<.001	
Industry mean, u_{0j}	.014	.006	2.505	.006	
Covariance, u_{10}	.009	.006	1.544	.123	
Slope, u_{1j}	.008	.006	1.248	.106	
Hispanic/Latino					5,757.513
Level-1 effect, r_{ij}	.136	.002	57.940	<.001	
Industry mean, u_{0j}	.014	.006	2.508	.006	
Covariance, u_{10}	.005	.006	.893	.372	
Slope, u_{1j}	.007	.009	.715	.237	
Asian					5,758.093
Level-1 effect, r_{ij}	.136	.002	57.965	<.001	
Industry mean, u_{0j}	.014	.006	2.502	.006	
Covariance, u_{10}	.002	.004	.415	.678	
Slope, u_{1j}	.002	.003	.865	.193	

Table 7 displays the random effects for other variables. In this case, models were all statistically a significant model improvement $\chi^2(3)$= 5,760.761-5,657.130=103.631,

p<.001; 5,760.761-5,106.641=654.120, p<.001; and 5,760.761-5,713.314=47.447, p<.001.

Table 7

Industry Random-Coefficient Random Effects for Other Variables on Leadership Effectiveness

	Variance	Wald Z	*p Value*	χ^2
Gender				5,657.13
Level-1 effect, r_{ij}	.135	57.879	<.001	
Industry mean, u_{0j}	.009	2.364	.009	
Predictor covariance, u_{10}	.006	2.153	.031	
Predictor slope, u_{1j}	.005	1.695	.045	
Education Level				5,106.641
Level-1 effect, r_{ij}	.133	55.514	<.001	
Industry mean, u_{0j}	.011	1.727	.042	
Predictor covariance, u_{10}	.000	.037	.711	
Predictor slope, u_{1j}	.000	.771	.220	
Management Level				5,713.314
Level-1 effect, r_{ij}	.136	57.864	<.001	
Industry mean, u_{0j}	.022	1.721	.042	
Predictor covariance, u_{10}	-.001	-.897	.370	
Predictor slope, u_{1j}	.000	1.197	.115	

In both ethnicity and other variables (Table 6 & 7), industry means, u_{0j} were significant: Diverse Individuals, b = .024, p=.011; White, b = .017, p=.014; Black, b = .014, p=.006; Hispanic/Latino, b = .014, p=.006; Asian, b = .014, p=.006; gender, b = .009, p=.009; educational level, b = .011, p=.042; and management level b = .022, p=.042. Taken together, this means that variation existed in the industry mean intercept of leadership effectiveness as compared to the grand mean of all industries when the respective demographic category is taken into account. Despite this, the residuals or

level-1 effect terms were also p<.001, and made little improvement from the intercepts only model.

Gender was the only level-one predictor to indicate that its' relationship with leadership effectiveness differed depending on the industry average of leadership effectiveness. Said simply, the covariance term u_{10} showed a positive relationship with females and leadership effectiveness and that these two variables influence each other b = .006, p<.001. Further, the slope u_{1j} for gender was also significant b = .005, p<.001, denoting that the relationship of leadership effectiveness and gender differed by industry. The presence of a significant slope u_{1j} signifies that the fixed effects (Table 5) for gender may not be interpretable, as u_{1j} represents the need for multiple slopes, one for each industry (Tabachnick & Fidell, 2007). Thus, a single fixed slope may not be accurate.

Integrating the findings from the random coefficient models, variables were entered together to find the best model. The combination of Diverse Individuals, gender, education level, and management level displayed the best model fit with $\chi^2(6)$= 5,760.761-4,937.370=823.391, p<.001 (Table 8). It is important to note that gender was interpreted as random effect due to its significant slope and covariance terms when initially run in random effects (Table 7) and all other variables were fixed.

As is indicated by Table 8, education and management levels were both substantial predictors. Estimates specify that as levels of management increased by one unit, leadership effectiveness increased by .014 and as education level increased by one unit, leadership effectiveness increased .016 points. Additionally, this model decreased individual variance by 4.4% (b = .131, p<.001) and industry variance by 35.7% (b = .009, p=.008). However, there were several problematic returns in this model. First, the

statistically significant slope term, u_{1j} for random effects indicated a greater than chance probability that the relationship of level-one effects and leadership effectiveness differed by industry; in essence, rendering fixed effects uninterpretable. Additionally, the clumping of minorities into Diverse Individuals, while empirically provided a strong model fit, did not supply a rich interpretation. For these reasons, an additional model was explored.

Table 8

Best-Fit Model of Leadership Effectiveness with 1st Level Predictors

Fixed Effects	Coefficient	*se*	*t Ratio*	*p Value*	
Grand mean, γ_{00}	3.899	.035	110.97	<.001	
Diverse Individuals slope, γ_{10}	.001	.012	.094	.925	
Gender slope, γ_{10}	.030	.021	1.431	.181	
Education Level slope, γ_{10}	.016	.007	2.471	.014	
Management Level slope, γ_{10}	.014	.003	4.703	<.001	
Random Effects	**Variance**	***se***	**Wald Z**	***p Value***	**χ^2**
Gender					4.937.370
Level-1 effect, r_{ij}	.131	.002	54.911	<.001	
Industry mean, u_{0j}	.009	.004	2.389	.008	
Covariance, u_{10}	.006	.003	2.286	.022	
Slope, u_{1j}	.005	.003	1.722	.042	

Adding specific demographic categories enriched the interpretation of Table 9. While the model decreased in fit, it still remained highly significant $\chi^2(6)$= 5,760.761-5,037.972=722.789, p<.001 and meaningful, as the location of gender became fixed permitting model interpretation. Black (b = .056, p=.029) on average had a stronger relationship with leadership effectiveness than other ethnicities and was the only statistically significant ethnic predictor. Both education and management level were

significant contributors and as they increased by one unit, leadership effectiveness increased .017 and .013 scale points respectfully. And while, no level-two predictors were incorporated into this model, the variance across industry means decreased by 7% (b = .013, p=.006) when first-level predictors were considered and variance was reduced by 4% (b=.131, p<.001) at the individual level.

Table 9

Interpretable Model of Leadership Effectiveness with 1st Level Predictors

Fixed Effects	Coefficient	*se*	*t Ratio*	*p Value*	
Grand mean, γ_{00}	3.864	.041	93.158	<.001	
White slope, γ_{10}	.035	.019	1.786	.074	
Black slope, γ_{10}	.056	.026	2.188	.029	
Hispanic/Latino slope, γ_{10}	.059	.034	1.756	.079	
Asian slope, γ_{10}	.038	.027	1.416	.157	
Gender slope, γ_{10}	.072	.010	7.158	<.001	
Education Level slope, γ_{10}	.017	.007	2.622	.009	
Management Level slope, γ_{10}	.013	.003	4.454	<.001	
Random Effects	**Variance**	***se***	**Wald Z**	***p Value***	χ^2
					5,037.972
Level-1 effect, r_{ij}	.131	.002	55.546	<.001	
Industry mean, u_{0j}	.013	.005	2.485	.006	

Exploring the eight summary dimension of TLCP as level-one predictors was not an option in this study. All eight competencies have strong correlations with leadership effectiveness. This has been verified by studies, which tested for content validity among factors (IPRA, 2008) as well as by a business index study (Anderson, 2006). As confirmation, a correlation analysis of leadership effectiveness to the competencies supported these findings as Reactive dimensions indicated a moderate to strongly negative association of r = -.40, p<.001 to r = -.60, p<.001 and Creative dimensions

indicated a highly positive association of $r = .77$, $p<.001$ to $r = .90$, $p<.001$. Such strong relationships assume multicollinearity and would heavily biased estimates.

Research Question 4: Second-level Considerations

As initially constructed, the fourth research question was conditional upon the appropriateness of analysis. While, subsequent levels of analyses enrich interpretation, their practical utility can be questionable. Often, ICC is used as a determinant for building additional levels of analysis. Although, there is not a clear cut-off in terms of percentage, as can be the case in interpreting statistics, it is unlikely that industry leaders would invest time and resources into predictors that, taken together, offer less than 10% explanatory power. For this reason, the fourth research question was deemed practically insignificant despite, findings that variation of leadership effectiveness was 9.3%, $p<0.001$ at the industry-level.

The presence of research question four, while not employable in its current construction, was particularly helpful for advancing scholarly inquiry. Too often insignificant results are not interpreted. Such indices can often be as informative, illuminating holes or gaps, as the authority of significant findings. For this study, there were two specific areas that permitted a reconstruction of possibility: the level of analysis and the dependent variable. Specifically, if there was not substantial variation at the industry-level, where might it reside? And, given that leadership effectiveness is highly correlated with all summary dimensions of TLCP, how might these dimensions vary across levels of inquiry? Such questions resulted in an exploratory quantitative investigation and are discussed further in Chapter 5.

CHAPTER 5

ORGANIZATION-LEVEL FINDINGS

Following the conclusion that second-level variance was limited when industries were considered, this chapter highlights an exploratory analysis of competencies as they vary across organizations. Finding that systems awareness explained considerable variability, further analysis investigated relevant predictors.

Research Question 5: Second-level Variance by Competencies

Engaging exploratory multi-level analysis, intercepts-only regression models were run across organizations within the TLCP. Fifty-four organizations composed a sample of the same 6,743 participants that were taken from the fifteen industries included in Chapter four. Fourteen models were run and ICC's (see Appendix D) indicated that Relating and Systems Awareness had the highest amount of variation across organizations 18.45% and 18.11% respectively. While all Creative dimensions have a positive correlation with Leadership Effectiveness, Relating suggested collinearity with a tolerance of .165 and a variance inflation factor (VIF) of 6.049; whereas, Systems Awareness displayed a tolerance of .250 and VIF of 3.996. Moreover, Systems Awareness implies an understanding of connectivity and working across systems, thus the theoretical contribution was more relevant to the study of nested phenomena in leadership.

Table 10 shows the results from the intercepts-only regression and baseline model for Systems Awareness. Here, the overall mean for Systems Awareness was reported as $b = 3.881$, $p<.001$. Variation across organizations, indicated in the random effects, was $b = .017$, $p<.001$ and accounts for 18.11% of the variance.

Table 10

Organization Intercepts Only Model on Systems Awareness

Fixed effect	Coefficient	*se*	*t Ratio*	*p Value*	
Grand mean, γ_{00}	3.881	.018	217.940	<.001	
Random effect	**Variance**	***se***	**Wald Z**	***p Value***	χ^2
					1,986.101
Level-1 effect, r_{ij}	.077	.001	57.823	<.001	
Industry mean, u_{0j}	.017	.003	5.049	<.001	

Research Question 6: First-level Predictors for Systems Awareness

Participant characteristics were each analyzed using a random-coefficient model separately. This was done to determine the nature of the variables before building a more complex model. As previously discussed, Hox (2002) recommended building exploratory models in this fashion, as the researcher can then interpret the relationship of variables to each other as they will likely vary in more complex models.

Twelve distinct variables were each examined in random-coefficients models. Table 11 contains the fixed effects of ethnicity, demonstrating the mean intercept and slope of systems awareness when each ethnicity is held constant. Unlike leadership effectiveness, all ethnicities successfully converged in this regression. Thus, Other is also included in these findings.

White, Asian, and Diverse Individuals all have a negative slope, indicating that these respective categories have a slightly negative relationship with systems awareness but none denote a significant relationship. Black, on the contrary, is the only ethnicity to signify statistical significance (b = .038, p=.032).

Table 11

Organization Random-Coefficient Fixed Effects for Ethnicity on Systems Awareness

Fixed Effects	Coefficient	*se*	*t Ratio*	*p Value*
Diverse Individuals				
Grand mean, γ_{00}	3.898	.021	185.652	<.001
Slope, γ_{10}	-.010	.011	-.939	.354
White				
Grand mean, γ_{00}	3.887	.019	206.283	<.001
Slope, γ_{10}	-.007	.011	-.651	.518
Black				
Grand mean, γ_{00}	3.879	.018	219.067	<.001
Slope, γ_{10}	.038	.016	2.327	.032
Hispanic/Latino				
Grand mean, γ_{00}	3.881	.018	217.007	<.001
Slope, γ_{10}	.021	.031	.678	.505
Asian				
Grand mean, γ_{00}	3.882	.018	217.498	<.001
Slope, γ_{10}	-.006	.017	-.320	.760
Other				
Grand mean, γ_{00}	3.883	.018	217.221	<.001
Slope, γ_{10}	-.047	.023	-2.057	.056

Six other categories of level-one predictors are shown in Table 12 for fixed effects. Positive relationships among predictors and systems awareness are indicated significant in all but the number of reports. However, the grand mean when educational level is constrained to zero (b = 3.800, p<.001) shows the most change from the null model (b = 3.881, p<.001), while the distance score of leadership effectiveness depicts the greatest slope (b = .177, p<.001).

Table 12

Organization Random-Coefficient Fixed Effects for Other Variables on Systems Awareness

Fixed Effects	Coefficient	*se*	*t Ratio*	*p Value*
Gender				
Grand mean, γ_{00}	3.857	.017	232.512	<.001
Slope, γ_{10}	.055	.009	6.299	<.001
Education Level				
Grand mean, γ_{00}	3.800	.027	141.085	<.001
Slope, γ_{10}	.034	.008	4.286	<.001
Management Level				
Grand mean, γ_{00}	3.827	.021	180.069	<.001
Slope, γ_{10}	.013	.003	4.831	<.001
Age				
Grand mean, γ_{00}	3.880	.017	223.017	<.001
Slope, γ_{10}	.004	.001	7.114	<.001
Reports				
Grand mean, γ_{00}	3.881	.018	219.567	<.001
Slope, γ_{10}	.000	000	1.103	.272
Distance LE				
Grand mean, γ_{00}	3.884	.016	236.219	<.001
Slope, γ_{10}	.177	.007	23.932	<.001

As shown in Table 13, random effects provided evidence that organizations varied in their mean when each ethnicity was considered. While there was no significant covariance or slope terms to report, Diverse Individuals and Black showed notable model improvement. Model fit for Diverse Individuals, White, Black, Hispanic/Latino, Asian, and Other are as follows: $\chi^2(3)$= 1,986.101-1,753.718= 232.383, p<.001; 1,986.101-

1,981.320= 4.781, p>.050; 1,986.101-1,975.860= 10.241, p<.050; 1,986.101-1,980.105= 5.996, p>.050; 1,986.101-1,986.002= .099, >.050; 1986.101-1,981.486= 4.615, p>.050.

Table 13

Organization Random-Coefficient Random Effects for Ethnicity on Systems Awareness

	Variance	*se*	Wald Z	*p Value*	χ^2
Diverse Individuals					1,753.718
Level-1 effect, r_{ij}	.076	.001	54.654	<.001	
Organization mean, u_{0j}	.019	.005	4.013	<.001	
Covariance, u_{10}	-.001	.002	-.326	.744	
Slope, u_{1j}	.001	.001	.902	.186	
White					1,981.320
Level-1 effect, r_{ij}	.076	.001	57.681	<.001	
Organization mean, u_{0j}	.016	.004	4.326	<.001	
Covariance, u_{10}	-.001	.001	-.029	.977	
Slope, u_{1j}	.001	.001	1.201	.115	
Black					1,975.860
Level-1 effect, r_{ij}	.076	.001	57.758	<.001	
Organization mean, u_{0j}	.017	.003	5.040	<.001	
Covariance, u_{10}	.002	.002	.745	.456	
Slope, u_{1j}	.000	.002	.638	.262	
Hispanic/Latino					1,980.105
Level-1 effect, r_{ij}	.076	.001	57.667	<.001	
Organization mean, u_{0j}	.017	.003	5.049	<.001	
Covariance, u_{10}	-.005	.005	-.917	.359	
Slope, u_{1j}	.011	.008	1.354	.088	
Asian					1,986.002
Level-1 effect, r_{ij}	.077	.001	57.557	<.001	
Organization mean, u_{0j}	.017	.003	5.032	<.001	
Covariance, u_{10}	.000	.002	.031	.976	
Slope, u_{1j}	.001	.003	.168	.866	
Other					1,981.486
Level-1 effect, r_{ij}	.076	.001	57.753	<.001	
Organization mean, u_{0j}	.017	.003	5.044	<.001	
Covariance, u_{10}	-.002	.003	-.600	.548	
Slope, u_{1j}	.002	.003	.763	.446	

As seen in Table 14, other variables of gender, education level, management level, age, number of reports and distance score of leadership effectiveness model fit included: $\chi^2(3)$= 1,986.101-1,917.161= 68.94, p<.001; 1,986.101-1,737.378= 248.723, p<.001; 1,986.101-1,946.016= 40.085, p<.001; 1,986.101-1,895.759= 90.342, p<.001; 1,986.101-1,983.676= 2.425, p>.050; 1,986.101-1,131.643= 854.458, p<.001. The distance score of leadership effectiveness proved to be the strongest model, also indicating variance among industry means (b = .014, p<.001) and slopes (b = .001, p = .043). Education level provided the next strongest model and likewise, showed variance among industry means (b = .025, p<.001) and slopes (b = .019, p=.014). The presence of a significant random effects slope in distance score of leadership effectiveness and education level suggested that estimates in fixed effects (Table 12) were not interpretable. Interestingly, the number of reports indicated significant covariance term (b = -.001, p=.032). The negative skew to this term, explained that as systems awareness increased, the relationship of systems awareness and number of reports decreased.

Table 14

Organization Random-Coefficient Random Effects for Other Variables On Systems Awareness

	Variance	*se*	Wald Z	*p Value*	χ^2
Gender					1,917.161
Level-1 effect, r_{ij}	.076	.001	57.523	<.001	
Organization mean, u_{0j}	.014	.002	4.836	<.001	
Covariance, u_{10}	.001	.001	.984	.325	
Slope, u_{1j}	.001	.001	1.002	.158	
Education Level					1,737.378
Level-1 effect, r_{ij}	.075	.001	55.136	<.001	
Organization mean, u_{0j}	.025	.008	3.268	<.001	
Covariance, u_{10}	-.003	.002	-1.733	.083	
Slope, u_{1j}	.001	.001	2.235	.014	
Management Level					1,946.016
Level-1 effect, r_{ij}	.076	.001	57.481	<.001	
Organization mean, u_{0j}	.019	.005	3.839	<.001	
Covariance, u_{10}	-.001	.001	-.741	.459	
Slope, u_{1j}	.000	.000	.905	.182	
Age					1,895.759
Level-1 effect, r_{ij}	.075	.001	57.500	<.001	
Organization mean, u_{0j}	.016	.003	5.021	<.001	
Covariance, u_{10}	.000	.000	.027	.979	
Slope, u_{1j}	.000	.000	1.278	.100	
Reports					1,983.676
Level-1 effect, r_{ij}	.076	.001	57.792	<.001	
Organization mean, u_{0j}	.017	.003	5.074	<.001	
Covariance, u_{10}	-.001	.000	-2.143	.032	
Slope, u_{1j}	.000	.000	-	-	
Distance LE					1,131.643
Level-1 effect, r_{ij}	.067	.001	57.623	<.001	
Organization mean, u_{0j}	.014	.003	5.035	<.001	
Covariance, u_{10}	-.004	.001	-.408	.683	
Slope, u_{1j}	.001	.001	1.712	.043	

Prior to building a complete multi-level model with individual predictors, the variables of education level and distance scores for leadership effectiveness displayed slopes that varied across organizations. This suggested that these variables may be best suited as a random instead of fixed effect. Decisions surrounding fixed and random effects "apply separately to each predictor in the model" and may take into account the nature of the variable as well as its behavior in random effects (Tabachnick & Fidell, 2007, p. 829). Thus, due to the categorical nature of education level, it was determined to be best accommodated by a fixed effect.

Ten other fixed variables were placed in the final first-level predictor model and are depicted in Table 15. The only variable assessed independently but not included was Diverse Individuals. While this variable showed significant model improvement as compared to other ethnicity variables, when ethnicity variables were included together, their strength of model fit was better overall than Diverse Individuals. Although, each individual variable was not statistically significant, exclusion of ethnicity variables decreased model fit.

Table 15

Best-Fit Model of Systems Awareness with 1st Level Predictors

Fixed Effects	Coefficient	*se*	*t Ratio*	*p Value*	
Grand mean, γ_{00}	3.775	.035	119.816	<.001	
White slope, γ_{10}	-.040	.022	-1.778	.075	
Black slope, γ_{10}	.034	.025	1.347	.178	
Hispanic/Latino slope, γ_{10}	.012	.030	.421	.674	
Asian slope, γ_{10}	-.018	.026	-.667	.505	
Other slope, γ_{10}	-.045	.028	-1.646	.100	
Gender slope, γ_{10}	.046	.007	6.238	<.001	
Education Level slope, γ_{10}	.031	.005	6.083	<.001	
Management Level slope, γ_{10}	.012	.002	5.514	<.001	
Age slope, γ_{10}	.004	.000	9.801	<.001	
Reports slope, γ_{10}	.000	.000	1.638	.102	
Distance LE slope, γ_{10}	.180	.008	23.872	<.001	
Random Effects	**Variance**	***se***	**Wald Z**	***p Value***	**χ^2**
Distance LE					780.663
Level-1 effect, r_{ij}	.065	.001	55.180	<.001	
Organization mean, u_{0j}	.012	.003	4.782	<.001	
Covariance, u_{1j}	-.001	.001	-.256	.798	
Slope, u_{1j}	.001	.001	1.550	.060	

Overall model fit (Table 15) dramatically increased $\chi^2(13)$= 1,986.101-780.663= 1,205.438, p<.001 and the grand mean of systems awareness changed from b = 3.881 in the baseline model to b = 3.775, p<.001. Variance at the individual-level decreased from .077 to .065 or 15.6% and variance at the organizational-level decreased from .017 to .012 or 29.4%. There was a positive relationship between systems awareness and all statistically significant variables. Specifically, there was a strong relationship between

females and systems awareness. Similarly, as education, management, age, and distance scores for leadership effectiveness increased so did systems awareness.

Research Question 7: Second-Level Predictors for Systems Awareness Means-As-Outcomes

Following the evaluation of first-level predictors, a means-as-outcomes regression was utilized to assess how industry-level variables could explain variance in systems awareness. Eighteen second-level variables were examined. Three variables: diverse organizations, female organizations, and higher education were calculated from first-level variables (see Chapter 3) to indicate cultural differences in organizational makeup. The other 15 variables represented specific sectors of industry that the organizations belonged to. Depicted, in Table 16, are only 17 of these variables, as the industry, Global Leadership, failed to converge.

Table 16

Means-As-Outcomes Model of Systems Awareness

Fixed Effects	Coefficient	*se*	*t Ratio*	*p Value*
Grand mean, γ_{00}	3.75	.063	59.821	<.001
Diverse org slope, γ_{10}	.056	.026	2.198	.033
Female org slope, γ_{10}	.096	.030	3.245	.002
Higher ed slope, γ_{10}	.040	.029	1.391	.170
Consulting slope, γ_{10}	.113	.056	2.015	.044
Education slope, γ_{10}	.110	.064	1.731	.085
Financial slope, γ_{10}	-.070	.103	-.674	.502
Government slope, γ_{10}	.027	.070	.391	.696
Manufacturing slope, γ_{10}	-.031	.073	-.424	.672
Telecom slope, γ_{10}	.186	.098	1.900	.060
Military slope, γ_{10}	.044	.080	.559	.577
Healthcare slope, γ_{10}	.112	.063	1.781	.076
Nonprofit slope, γ_{10}	.181	.081	2.235	.027
Energy slope, γ_{10}	-.056	.066	-.843	.400
Service slope, γ_{10}	.032	.096	.329	.743
Restaurant slope, γ_{10}	.043	.094	.454	.651
Insurance slope, γ_{10}	-.047	.100	-.472	.638
Conglomerate slope, γ_{10}	-.121	.088	-1.382	.168

Random Effects	Variance	*se*	Wald Z	*p Value*	χ^2
					1,803.377
Level-1 effect, r_{ij}	.076	.001	56.900	<.001	
Organization mean, u_{0j}	.005	.001	4.303	<.001	

As would be expected, individual variance experienced little improvement, a 1.3% change overall (b = .076, p<.001); however, organizational variance decreased 70.6%, delivering powerful explanatory authority. Model fit indicated b = 3.75, p<.001, $\chi^2(20)$= 1,986.101-1,803.377= 182.724, p<.001. As can be seen in Table 16, the extent to which an organization was female-dominant increased systems awareness by .096,

p=.002 and was the most powerful second-level predictor. Organizations that were more diverse (b=.056, p=.033), or apart of the nonprofit (b=.181, p=.027) or consulting (b=.113, p=.044) industries were also significantly more likely to have higher systems awareness.

Intercepts and Slopes

In support of this study's final research question, a multi-level model including first and second-level predictors was designed. The final intercepts and slopes model of MLM is summarized in Table 17 and shows the best fit with $\chi^2(29)$= 1,986.101-727.936= 1,258.165, p<.001.

Table 17

Best-Fit Model of Systems Awareness with 1st & 2nd Level Predictors

Fixed Effects	Coefficient	*se*	*t Ratio*	*p Value*
Grand mean, γ_{00}	3.684	.064	57.252	<.001
White slope, γ_{10}	-.042	.022	-1.863	.062
Black slope, γ_{10}	.032	.025	1.274	.203
Hispanic/Latino slope, γ_{10}	.011	.030	.366	.714
Asian slope, γ_{10}	-.022	.026	-.848	.396
Other slope, γ_{10}	-.047	.028	-1.706	.088
Gender slope, γ_{10}	.043	.007	5.835	<.001
Education Level slope, γ_{10}	.030	.005	5.894	<.001
Management Level slope, γ_{10}	.012	.002	5.399	<.001
Age slope, γ_{10}	.004	.000	9.731	<.001
Reports slope, γ_{10}	.000	.000	1.654	.098
Distance LE slope, γ_{10}	.178	.008	23.337	<.001
Diverse org slope, γ_{10}	.040	.024	1.652	.105
Female org slope, γ_{10}	.051	.028	1.814	.076
Higher ed slope, γ_{10}	.023	.027	.845	.402
Consulting slope, γ_{10}	.107	.052	2.041	.041
Education slope, γ_{10}	.098	.059	1.655	.099
Financial slope, γ_{10}	.026	.096	.267	.790
Government slope, γ_{10}	.018	.065	.284	.777
Manufacturing slope, γ_{10}	-.032	.068	-.462	.645
Telecom slope, γ_{10}	.197	.091	2.158	.034
Military slope, γ_{10}	.015	.074	.209	.835
Healthcare slope, γ_{10}	.104	.058	1.769	.078
Nonprofit slope, γ_{10}	.120	.076	1.584	.116
Energy slope, γ_{10}	-.064	.062	-1.038	.301
Service slope, γ_{10}	.028	.089	.314	.754
Restaurant slope, γ_{10}	.016	.088	.178	.860
Insurance slope, γ_{10}	-.020	.095	-.214	.831
Conglomerate slope, γ_{10}	-.125	.082	-1.523	.129

Table 17 *Continued*

Best-Fit Model of Systems Awareness with 1st & 2nd Level Predictors

Random Effects	Variance	*se*	Wald Z	*p Value*	χ^2
					727.936
Level-1 effect, r_{ij}	.065	.001	55.147	<.001	
Organization mean, u_{0j}	.004	.001	4.010	<.001	
Organization mean Distance LE, u_{0j}	.001	.001	1.577	.057	

All variables with the exception of distance score for leadership effectiveness were fixed. Allowing this distance score to generate random slopes across organizations within the full model decreased the variance from .012 (Table 15) to .001, a reduction of 91.7%. Overall, individual variance was reduced by 15.6% (b = .065, p<.001), which was an improvement from the baseline model but equivalent to the first-level predictor model. Organizational variance was minimized by 76.5% as it departed from the baseline of b = .017, p<.001 to b = .004, p<.001. The grand mean of systems awareness differed significantly in this final model (b = 3.684, p<.001) from the null (b = 3.881, p<.001).

Although Ethnicity variables at the first-level remained statistically insignificant, they nevertheless contributed to model fit. Similarly, organizations that expressed more ethnic diversity were not significant despite, previously being significant in the Means-As-Outcomes Model (Table 16). In fact, with the exception of Consulting (b = .113, p=.044) and Telecom (b = .186, p=.034), none of the organizational predictors were significant. Conversely, several individual predictors, gender b = .043, education level b

= .030, management level b = .012, age b = .004, and distance scores for leadership effectiveness b = .178, showed a significant ($p<.001$) positive relationship with systems awareness.

CHAPTER 6

DISCUSSION

The original focus of this dissertation was to investigate the variance of leadership effectiveness across industries using MLM in TLCP. Previous literature, which investigated the level of analyses in leadership research, indicated that there remained a dearth of MLM studies (less than 17%) and that the majority of existing research examined only the individual or leader (Dionne et al., 2014). This demonstrates the lack of alignment between theoretical and empirical work in leadership studies, as it is widely acknowledged that context matters in terms of human development (Bronfenbrenner, 2005; Cook-Greuter, 1999; Kegan, 1982; Torbert, 2004), relationships (Bass, 1998; Burns, 1978; Dansereau, Graen, & Haga, 1975), organizational culture (Higgins, 2005; Schein, 2004), and system processes (Argyris,1957; Laszlo, 1975; Scharmer, 2007; Senge, 1990; Wheatley, 1999). Further, as many studies focus on leadership within a particular sector or dichotomously coded as private versus public (Kroeck & Sivasubramaniam, 1996) or utilize instruments that are informed by a single theory (Yukl, 2012), this study selected an instrument, TLCP, which demonstrated breadth across numerous sectors (39 industries), incorporated multiple leadership theories, accounted for human development theory contributions, and was externally deemed valid and reliable (IPRA, 2008).

A total of 246,645 records were collected from TLCP. As TLCP is a 360-degree instrument, this represented over 19,000 individuals and their respective raters. However, since the predominant method of analysis was MLM, considerations for second-level analysis required a minimum of 15 categories with at least 50 first-level

measurements. In other words, it was specified that records for inclusion were industries and organizations that contained at least 50 participants. Thus from the original sample, 6,743 individuals from 54 organizations and 15 industries were retained.

Initial analysis revealed that leadership effectiveness variance was limited at the industry-level. Thus, a series of exploratory analyses ensued. Of the eight summary dimensions (leadership competencies) within TLCP, systems awareness was determined to be of particular relevance to this study's aim as it encompasses how individuals interpret feedback in terms of behaviors, relationships, and processes. Systems awareness acknowledges the importance of context in leadership and, its principles have been deemed paramount to leaders who want to enact change in a globally more conscious future (Scharmer, 2007; Senge, 1990; Western, 2008). Thus, due to its explanatory power (ICC>18%) and its theoretical alignment with this study's purpose, it was included in the analytical investigation.

This chapter summarizes the findings of this study, providing connection to the literature, relevant future directions, and concludes with limitations and implications. Symbolic of the nested nature of this study, findings will be discussed in accordance with the literature.

Leadership Effectiveness Findings

Since TLCP is a 360-instrument, it was a particularly attractive vehicle for analysis, providing both other and self-ratings. Typical of quantitative analyses involving multiple scale scores, careful consideration was required on how to construct the dependent variables. Interestingly, out of the three possibilities, the mean aggregate of others' scores (ICC=9.6%) provided the most explanatory power of differences across

industry. From an empirical point of view, there was likely less bias in others' scores, while also providing richer variability. Yet from a practical standpoint, this may signal a need for leaders to reevaluate self-importance and perspective. Examining these values confirmed that self-reported scores were inflated – or at the very least echoes the question: whose opinion matters?

As was anticipated, variability in predictor significance and impact was observed as models increased in complexity. For example, in the leadership effectiveness models, none of the demographic variables indicated a significant relationship with the grand mean of leadership effectiveness when individually assessed in fixed effects. However, when variables were entered together in the full model, Black participants were positively associated with leadership effectiveness, as were females and increasing levels of management and education.

Positive associations of higher education and management levels with leadership effectiveness were not surprising. It is likely that as participants progressed academically and professionally, they gained relevant skills and knowledge for more effective leadership. Possibilities, opportunities, and challenges may have more readily presented themselves, providing further life experiences and practical knowledge. Additionally, having already attained some advancement in stature, denoted by title and degree, such individuals might be more predisposed to performance and achievement goals. Consequentially, educational degrees and professional titles may inherently convey more authority and power. Understandings of group dynamics would offer that these messages (consciously or subconsciously) of role and power likely influence raters' perception of participants (Green & Molenkamp, 2005).

Particular note must be attributed to the significance of Black participants' relationship to leadership effectiveness. Prior literature gave no indication that Black participants' leadership effectiveness would be significantly different from all other ethnicities. Perhaps the reason this particular ethnicity was distinctive is grounded in social history. Given that this sample was highly westernized, persisting mental schemas might exist around the nature of being Black. Carrying forth themes from post-colonial America, Black participants may more readily be perceived as persistent and strong. Likewise, Black participants might hold their identity with more pride and fortitude, and readily rise to the challenge of leadership with confidence and capability. This could also be a result of "double consciousness". Offered by W.E.B. Du Bois (1903) double consciousness refers to the phenomenon in African American psychology whereby, individuals are aware of their self-identity while, at the same time, cognizant of how they are being perceived by others – being Black in a predominantly White world. In addition, while never pleasant to consider, prevailing themes of prejudice may inhibit opportunities for Black individuals. Thus, when selected for positions of leadership, it is more likely such participants have pronounced leadership capacity, undeniably in contrast to other candidates. Of course such proposals are highly speculative and would require focused exploration and investigation in further studies.

Females displayed a strong relationship with leadership effectiveness across industries. Their positive correlation with leadership effectiveness might have followed similar trends as being Black. In that, as a historically oppressed minority, they may hold leadership opportunities with more weight and likewise, may be required to notably outperform other candidates in order to advance. Positions for women have not been as

prevalent (Eagly & Carli, 2007), and may have encouraged those that rise to the occasion to be significant contributors. Less speculative, it is widely acknowledged that women tend to have more participatory, creative and collaborative ways of leading (Eagly & Johnson, 1990; Batliwala, 2011). Women tend to focus on relationships more so than tasks, as compared to men, and they use alternative methods to engage others (Eagly & Johnson, 1990; Batliwala, 2011). Thus, it is highly likely that such stylistic differences in leading may be more favorable in the eyes of the rater and more aligned with what is needed in today's society. Moreover, the top-half of the circle, Creative, is associated with leadership effectiveness and is comprised of competencies that by nature lend themselves to more feminine ways of leading. This is not to say that males cannot equally employ feminine leadership style, quite the contrary. In essence, males tendency to use feminine forms of leadership likely heighten their perceived leadership effectiveness. Doing so, might explain the finding that women's relationship to leadership effectiveness demonstrated a positive relationship with the overall leadership effectiveness score in the industry of their membership. Specifically, as an industry's leadership effectiveness score increased, so did females' relationship to leadership effectiveness. The cultural implications suggest that feminine forms of leading may be more well-received and more favorable in industries where competencies associated with leadership effectiveness are more widely practiced.

Systems Awareness Findings

When leadership effectiveness did not indicate that variability across industries was of practical note, exploratory MLM regressions were conducted and found that at the organization-level, relating and systems awareness explained significant variance. In

terms of alignment, systems awareness was pursued as it offered insight into understanding complex systems, a major focus of this study, and showed a wider breadth of scope, as relating was more highly associated with leadership effectiveness and suggested some concerns with multicollinearity. Unlike leadership effectiveness, systems awareness was considered a summary dimension and was comprised of three distinct factors: community concern, productive stability, and systems thinker.

Whereas, models of leadership effectiveness held less explanatory power at the industry-level, the final intercepts and slopes model of systems awareness reduced organizational variance by 76.5%. Findings reported that gender, education level, management level, age, and most significantly – distance scores were important participant predictors. Organization predictors, while important in explanatory power for the model, were less substantial in the presence of participant predictors. This information was consistent with baseline models, indicating that much of the variance (81.9%) resided at the participant-level. Regardless, consulting and telecommunications industries showed a positive relationship with systems awareness.

Again, education and management level arose as significant participant predictors. As previously mentioned in the leadership effectiveness findings, progression in academic and professional life displayed signs of achievement, desire for improvement, advancement, and demonstrated fortitude in work ethic. These themes likely gave participants an advantage or in the very least, demonstrated experience in navigating complex situations and developing solutions. Consistent with human development, high achievement may signal complex associations with generative nature (Erikson, 1959). In essence those that have reached personal success, may derive further

meaning from giving back and contributing to the greater good. Further, the ability to navigate systems skillfully is also associated with higher levels of development (Cook-Greuter, 1999; Kegan, 1982; Torbert, 2004) and may locate participants with higher systems awareness to higher roles. While higher levels of human development are associated with more advanced skills in leadership (Brown, 2012; Torbert, 2004) testing causality was not possible in this study, and therefore it cannot be determined if higher-level leaders gain more systems awareness or if systems awareness positions individuals to higher levels of leadership.

Unsurprisingly, age was associated with higher systems awareness scores. Cognitive science is well informed, in that as humans grow and develop they demonstrate increasing capacities for complex thought and construction. Piaget's (1948) work supports this notion, demonstrating in clinical trials that development in complex associations can demonstrate a general linear trajectory with age. Indeed, many developmental theorists provide age parameters around their developmental stages and conceptualizations (Piaget, 1948; Erikson, 1959). Thus, age is also representative of lived experience and displayed similar patterns to those of education and management level.

As was the case in leadership effectiveness, females indicated a positive relationship with systems awareness. Due to their emphasis on relationships and processes, literature (Eagly & Johnson, 1990; Batliwala, 2011) would support a foreseeable connection among all subscales: community concern, productivity stability, and systems thinker. Namely that females typically have strong ties to relationships,

demonstrate more reflectivity, and tend to be more process-focused and thus may be more predisposed to foundational concepts of systems awareness.

The distance score for leadership effectiveness was the largest predictor. As a mean-centered variable, it represented how close a participant's score was to the mean of others' scores whether or not that value was over or underestimated (positive or negative). It is important to note that distance was the only variable permitted to randomly vary across slopes. If in fact, distance had indicated a significant effect (and it did), it would have been expected that as systems awareness increased, distance decreased. This was not the case. As systems awareness increased, so did distance. Initially, this finding was puzzlingly. It would seem that the ability to understand how parts work in relationship to the whole might also denote an association with increased perception and awareness of self in relation to others (Senge, 1990; Scharmer, 2007). Given that distance had a positive relationship with systems awareness, this finding, perhaps, signals a distinction between systems thinking and self-awareness. It may also indicate a departure from holding the value of oneself in the light of others. Simply stated, without further research, it is difficult to assess if the discrepancy in distance scores (as compared to systems awareness) is due to a lack of perception, increase in self-authorship or a more advanced form of consciousness, or simply a Type I error where the null hypothesis of no effect has been mistakenly rejected. Since high scores in systems awareness mark more advanced forms of consciousness (Anderson, 2006), it may be possible that individuals who demonstrate increasingly complex levels of development also are aware of other perceptions yet maintain confidence in the value they placed upon their leadership (above or below the mark of others). The ability to utilize systems

awareness would lend itself to higher levels of consciousness, and as of yet, it is unclear if such forms of making-meaning are a separate skill set or if such ways of making-meaning are elevated from others' more predominant world-view.

Also significant in the final model were consulting and telecommunications. These predictors represented the only second-level variables to demonstrate significant relationships with systems awareness and further, were the only two of 15 industries to do so. While the nonprofit industry did show a positive correlation with systems awareness in the means-as-outcomes (second-level predictors only) model, its positive relationship with systems awareness was not deemed significant in the final model. Despite this, positive associations for consulting and telecommunications were promising. For consulting, it would be expected that in order to advise systems, strategy, and support processes of growth or transformation, one would need a high degree of systems awareness. Likewise, as a provider, sustainer, and developer of worldwide communication and information, connecting disparate regions together, it was also not surprising to find telecommunications was a significant industry.

Implications

The results of this study may provide several layers of implications for practical use. First, a general overview of layers of analysis and why that matters is described. Then themes found at the participant level are discussed as they contributed to both leadership and systems awareness. Following, are other predictors and their implications as they relate to leadership effectiveness or systems awareness. Concluding this section is an overview of larger implications for this work in practice and scholarship.

This research found that leadership effectiveness was particularly interesting when studied through the perception of others and that, despite variation in competency scores across industries, leadership effectiveness demonstrated little variability. This suggests that leadership effectiveness may not be the best indicator of whether or not an individual will be successful across industries and may support existing literature that acknowledges the value in different ways of leading (Alevesson, 1996). Instead, observing competencies proved to be more illuminating. However, it was also found that organizations provided slightly more variability when investigating leadership competencies. Consistent with the literature, organizations may have stronger cultural lines than industries (Higgins, 2005; Schein, 2004). While industries should also be considered, as there is some variability, it may be more likely that transferability in leadership is contained more at the organizational level than industry level.

With regard to leaders' capacities, education needs to be at the foreground. Advancement in education had a highly significant relationship with leadership effectiveness and systems awareness. In order to more fully develop leadership and big picture thinkers with a global conscience, organizations and industries should look towards continued development and furthering education and individuals should take steps to invest in their education accordingly. Additionally, due to the relationship of systems awareness and leadership effectiveness with increasingly more advanced positions of management, leaders should seek opportunities for advancement and organizations and industries would be best served by supplying such possibilities to further develop their leaders.

One of the most resounding themes of this study was found in investigating females' relationship to leadership effectiveness and systems awareness. Females demonstrated a positive relationship with both leadership effectiveness and systems awareness. However, females' relationship to leadership effectiveness was also connected to the industry average for leadership effectiveness. As leadership effectiveness is highly associated with the creative dimension of TLCP, and such capacities resemble more feminine ways of leading, industries and organizations may look to increase support of feminine ways of leading. This may look like relationship building events, incentives for creative applications, and the support of open dialogue in professional settings.

The fact that this study found Black individuals had a significant relationship with leadership effectiveness is important for at least two reasons. First, from an academic standpoint, this finding highlights the importance of distinguishing, as much as possible, across descriptive variables. While it may be more desirable to have significant power behind criterion, critical distinctions can also be lost. Second, this finding does suggest such a distinction is significant and should be further examined. While it was not in the breadth of scope of this study to analyze the "why" or "how" of Black leadership, these are important questions, and will be further delineated in the next section.

Finally, while leadership effectiveness and systems awareness shared some common themes, the implications of systems awareness findings were also distinct in several ways. First, systems awareness was examined because it showed significant variability across industries, more so than most other competencies. As emergent and new leadership theories cite a need for more systems awareness or thinking, developing

this competency more widely across organizations will be critical. The call for leaders who can work with change, complexity, and ambiguity for the common good is increasingly present (Grace, 2011; Scharmer, 2004; Western, 2008) and exceeds what has been traditionally framed as cultural competency or global leadership and moves beyond people and processes to understanding how such elements simultaneously inform each other and the larger system. However, supporting the nature of this distinctive construct, awareness of how systems work and contributing to that efficiency in meaningful ways does not inherently lend itself to understanding self–perception as presented by simply quantitative comparison. Further research is needed to investigate the capacity of leaders who demonstrate high degrees of systems awareness and whether or not this way of thinking signals a different skill set from self-awareness or if, developmental, post-conventional leaders are by nature deviate from the perception of others.

Further, as there is growth in life experience and age, systems awareness increases. Thus leaders seeking to develop this capacity may expose themselves to more opportunities for practice. As there remain very few industries and organizations today that operate in isolation, many would benefit from enhanced systems awareness. Such leaders should look into developing some of the criterion provided within this implications section.

Ultimately, the individual level predictors explained the most variance; however, investigating individual predictors was important to do in context with their organization. Said differently, nested models matter. Individual criterion changed as industry and organization were considered and they changed in contrast to other criterion variables. Leaving variables out, despite their significance levels, drastically changes parameter

estimates and provides a false perception of how much something truly makes a difference. Thus, moving forward, leadership studies needs to consider analytical techniques that account for multiple layers of meaning to give more breadth to scholarly work.

Future Research

There are a number of avenues for future research as a result of this study. Several of the most pressing themes are discussed below.

First, this study was limited by its archival nature. It would be of use to execute a similar study with more recent data records. And, may be of even more interest to draw comparisons across samples.

Second, gender differences played a large role in both leadership effectiveness and systems awareness. While it was speculated that these differences may be closely associated with feminine ways of leading, as supported by the literature, it would be beneficial to closely examine how females differ across industries and organizations. Particular emphasis should be placed on investigating why organizations with higher leadership effectiveness scores also have significantly higher levels of women with high leadership effectiveness. While at first glance, this may seem in part due to the composition of the organization (more females equates to higher leadership effectiveness or systems awareness), the three highest female-dominated industries (service, nonprofit, and healthcare) did not indicate significant levels of systems awareness in the final model.

A third area of research might include ethnic studies across industries and organizations with regard to leadership effectiveness. This study showed that Black

participants, indeed, had a higher leadership effectiveness score than other ethnicities. Research investigating this connection would be particularly interesting. Perhaps, such work would draw implications across culture, context, and perception.

Fourth, further work is needed with regard to the leadership competencies exemplified by post-conventional leaders. Systems awareness would suggest a higher-level of consciousness and increasingly complex thought process; yet, its inverse relationship to the perception of others leaves many unanswered questions. Further research is needed to illuminate the movement in development towards systems awareness capacities.

Finally, one of the major themes of this work was that while leadership effectiveness did not differ greatly across industry, variability showed more promise when competencies were individually assessed. Although it was not in the scope of this study to investigate all eight summary dimensions of TLCP at a deep level, it would be of critical value to see the range of differences and similarities. Along the same lines, noting how others' perceptions differ from self-perceptions would also make an interesting cross-case analysis and may be potentially worthwhile to explore at the relationship level.

Limitations

Due to the nature of archival data and inherent limitations of any methodology this study was bounded in several ways. As an archival data set, the TLCP, its design, and applicable variables were preset. Although there were gains in having an established instrument with a large sample, the ability to manipulate variables was restricted to information that had already been collected. Information as to why TLCP was preferred

or utilized over other existing instruments and avenues was not known and thus, a self-selection bias is likely at play. Additionally, while this is a reputable instrument and while data cleaning did occur, the possibility of some record or reporting errors could have gone undetected.

Recent years of TLCP data were not included in this study and thus findings could be dated and not representative of the current situation particularly in industry sectors. And despite its international scope, TLCP remains a predominantly Western, Caucasian-dominant sample. Therefore, the study's findings are not generalizable across all people and cultures.

Lastly, as a quantitative study, the ability to capture social phenomena was constrained by method and philosophy. The richness to which variables in this study could be observed, experienced or conveyed could not be fully expressed. While this study attempted to account for context and interactive components, undoubtedly some depth was lost for breadth.

Conclusion

During the past decade, there have been substantial contributions to the field of leadership studies, expressing the complexities of context, eliciting more expansive consciousness, and citing the need for transformative co-creation. Similarly, advancements in empirical and heuristic methods, while still limiting, have offered new ways to conceptualize phenomena. Yet, despite this, engagement of this knowledge remains repressed while normative models persist. This study extends leadership literature by examining on a large scale how leadership effectiveness varied across industries. Consequentially, one of the most significant findings was that there was little

variability across industries with regard to leadership effectiveness. Though individuals who had achieved higher levels of education, higher levels of management, who were female, and who were Black displayed significantly higher leadership effectiveness than others, variability situated at the industry-level was not large enough to warrant further analysis. However, when TLCP competencies were examined, systems awareness showed a heightened level of variability across organizations. This was concerning, as progressively, leadership theory has called for systems awareness as a pivotal quality for the advancement of society. Again, there were marked differences positively associated with individuals who were female, had higher levels of education and management but when systems awareness was concerned, age, distance scores, and type of industry also mattered.

As was demonstrated in this dissertation, leadership is a multi-faceted phenomenon. Like many areas of social science, attempts to capture the characteristics, processes, and components of leadership may appear paradoxical and in fact, they are. In the pursuit of knowledge, any construction must set parameters and such boundaries inherently exclude as much if, not more of what is included. In the case of this study, individual characteristics were highly significant; denoting that who we are and what labels define us as leaders, matter. However, context was also significant and provided evidence that while the call for a more conscious leadership that can contribute to the common good is abounding, many organizations are not ready to respond.

The hope of this study is that calling attention to systems awareness will heighten the attention we place on such measures and consequentially inspire the necessary work of more effective leadership.

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Appendix A
The Leadership Circle™ Letter of Consent

March 5, 2014

Institutional Review Board,

As the Chairman and Chef Development Officer of The Leadership Circle, I am writing to formally submit that Crystal L. Dujowich has my permission to conduct research analysis on the archival data set contained by The Leadership Circle Profile. This is a pre-existing dataset and therefore, Crystal L. Dujowich will not be in contact with our clients but correspond directly with me with the progress and nature of her research. I am aware that she is applying for Institutional Review Board approval for her dissertation research that will be conducted using our records. Confidential information will remain as such, under the property and protection of The Leadership Circle.

If you have any further questions, please contact me.

Sincerely,

Founder, Chairman, & Chief Development Officer
419 877 0430

Appendix B
Industries within TLCP

Industries
Broadcasting
Consulting
Education
Financial
Government
Technology
Legal
Manufacturing
Marketing
Research
Retail
Social Service
Telecommunications
Military
Healthcare
NonProfit
Automotive
Construction
Energy
Recreation
Service
Architecture
Restaurant
Transportation
Insurance
Pharmaceutical
Conglomerate
Real Estate
Printing
Government Contractor
Recruitment
Publishing
Social Services
Global Leadership
Travel/Entertainment
Spanish
Museum
Entrepreneur
Chemical

Appendix C
Demographics Across Industries

Appendix C

Ethnicity Across Industries

		White		Black		Hispanic		Asian	
Industry	*n*	*Count*	*%*	*Count*	*%*	*Count*	*%*	*Count*	*%*
Consulting	618	515	83.3	21	3.4	12	1.9	31	5.0
Education	1985	1469	74.0	217	10.9	56	2.8	110	5.5
Financial	50	31	62.0	7	14.0	0	0	6	12.0
Government	361	266	73.7	35	9.7	9	2.5	29	8.0
Manufacturing	315	280	88.9	7	2.2	2	0.6	7	2.2
Telecommunications	66	59	89.4	3	4.5	0	0	2	3.0
Military	191	157	82.2	2	1.0	9	4.7	14	7.3
Healthcare	1315	1086	82.6	78	5.9	35	2.7	73	5.6
NonProfit	130	112	86.2	3	2.3	3	2.3	0	0
Energy	778	565	72.6	48	6.2	26	3.3	53	6.8
Service	73	58	79.5	7	9.6	4	5.5	1	1.4
Restaurant	160	130	81.3	8	5.0	11	6.9	10	6.3
Insurance	39	39	100	0	0	0	0	0	0
Conglomerate	57	47	82.5	0	0	1	1.8	8	14.0
Global Leadership	50	35	70	1	2.0	0	0	9	18.0

Appendix C *Continued*

Ethnicity Across Industries

		American Indian		Other		Prefer Not to Answer	
Industry	*n*	*Count*	*%*	*Count*	*%*	*Count*	*%*
Consulting	618	0	0	28	4.5	11	1.8
Education	1985	6	0.3	94	4.7	33	1.7
Financial	50	0	0	6	12	0	0
Government	361	0	0	8	2.2	14	3.9
Manufacturing	315	1	0.3	11	3.5	7	2.2
Telecommunications	66	0	0	1	1.5	1	1.5
Military	191	0	0	2	1.0	7	3.7
Healthcare	1315	3	0.2	20	1.5	20	1.5
NonProfit	130	1	0.8	6	4.6	5	3.8
Energy	778	1	0.1	53	6.8	32	4.1
Service	73	1	1.4	2	2.7	0	0
Restaurant	160	0	0	1	0.6	0	0
Insurance	39	0	0	0	0	0	0
Conglomerate	57	0	0	0	0	1	1.8
Global Leadership	50	0	0	1	2.0	4	8.0

Appendix C *Continued*

Gender Across Industries

Industry	*n*		Female		Male	
			Count	%	*Count*	%
Consulting	721	3	388	53.8	33	45.8
Education	2276	5	820	36.0	1451	63.8
Financial	50	0	26	52.0	24	48.0
Government	361	0	157	43.5	204	56.5
Manufacturing	315	0	70	22.2	245	77.8
Telecommunications	66	0	22	33.3	44	66.7
Military	191	0	27	14.1	164	85.9
Healthcare	1465	3	840	57.3	621	42.4
NonProfit	130	0	106	81.5	24	18.5
Energy	778	1	151	19.4	626	80.5
Service	73	0	72	98.6	1	1.4
Restaurant	160	0	52	32.5	108	67.5
Insurance	50	8	12	24.0	30	60.0
Conglomerate	57	0	13	22.8	44	77.2
Global Leadership	50	0	3	6.0	47	94.0

Appendix C *Continued*

Educational Level Across Industries

Industry	*n*	High School		Some College		Associate's Degree	
		Count	*%*	*Count*	*%*	*Count*	*%*
Consulting	618	5	0.8	27	4.4	17	2.8
Education	1985	4	0.2	38	1.9	39	2.0
Financial	50	16	32.0	18	36.0	5	10.0
Government	361	9	2.5	24	6.6	11	3.0
Manufacturing	315	21	6.7	34	10.8	18	5.7
Telecommunications	66	8	12.1	13	19.7	2	3.0
Military	191	1	0.5	10	5.2	2	1.0
Healthcare	1314	11	0.8	61	4.6	72	5.5
NonProfit	130	1	0.8	7	5.4	6	4.6
Energy	778	45	5.8	44	5.7	36	4.6
Service	73	2	2.7	4	5.5	3	4.1
Restaurant	160	6	3.8	11	6.9	7	4.4
Insurance	36	1	2.6	0	0	0	0
Conglomerate	57	1	1.8	4	7.0	3	5.3
Global Leadership	50	0	0	1	2.0	0	0

Appendix C *Continued*

Educational Level Across Industries

Industry	*n*	Undergraduate Degree		Some Graduate		Master's Degree		Doctorate Degree	
		Count	*%*	*Count*	*%*	*Count*	*%*	*Count*	*%*
Consulting	618	132	21.4	77	12.5	292	47.2	68	11.0
Education	1985	895	45.1	490	24.7	417	21.0	102	5.1
Financial	50	9	18.0	2	4.0	0	0	0	0
Government	361	77	21.3	39	10.8	115	31.9	86	23.8
Manufacturing	315	120	38.1	33	10.5	84	26.7	5	1.6
Telecommunications	66	24	36.4	5	7.6	13	19.7	1	1.5
Military	191	48	25.1	45	23.6	78	40.8	7	3.7
Healthcare	1314	235	17.9	112	8.5	584	44.4	239	18.2
NonProfit	130	34	26.2	17	13.1	59	45.4	6	4.6
Energy	778	275	35.3	83	10.7	252	32.4	43	5.5
Service	73	19	26.0	7	9.6	29	39.7	9	12.3
Restaurant	160	56	35	14	8.8	63	39.4	3	1.9
Insurance	36	24	61.5	4	10.3	7	17.9	3	7.7
Conglomerate	57	18	31.6	5	8.8	25	43.9	1	1.8
Global Leadership	50	6	12.0	1	2.0	39	78.0	3	6.0

Appendix D
ICC Calculations

$ICC = \tau 00 / (\tau 00 + \sigma 2)$.

Industry					
Agg Other LE	σ2	0.136627	=	0.095838104	9.6%
	τ00	0.014482	=		
Agg Self Other LE	σ2	0.121525	=	0.06238668	6.2%
	τ00	0.008086	=		
Distance Self Other LE	σ2	0.312747	=	0.047028926	4.7%
	τ00	0.015434	=		

$ICC = \tau 00 / (\tau 00 + \sigma 2)$.

Organization					
Agg Other LE	σ2	0.131027	=	0.103672135	10.4%
	τ00	0.015155	=		
Agg Self Other LE	σ2	0.116527	=	0.079063629	7.9%
	τ00	0.010004	=		
Distance Self Other LE	σ2	0.303244	=	0.063651353	6.4%
	τ00	0.020614	=		
Relating	σ2	0.106672	=	0.184489771	18.4%
	τ00	0.024132	=		
Self Awareness	σ2	0.075225	=	0.1386812	13.9%
	τ00	0.012112	=		
Authenticity	σ2	0.059404	=	0.124196497	12.4%
	τ00	0.008424	=		
Systems Awareness	σ2	0.076560	=	0.181106405	18.1%
	τ00	0.016932	=		
Achieving	σ2	0.073127	=	0.113418685	11.3%
	τ00	0.009355	=		
Controlling	σ2	0.157069	=	0.148086477	14.8%
	τ00	0.027303	=		
Complying	σ2	0.064751	=	0.09391005	9.4%
	τ00	0.006711	=		
Protecting	σ2	0.126545	=	0.107958551	10.8%
	τ00	0.015315	=		
Creative	σ2	0.058786	=	0.163379159	16.3%
	τ00	0.011480	=		
Reactive	σ2	0.071540	=	0.165879651	16.6%
	τ00	0.014227	=		