2011

A Psychometric Analysis Of The Leader Resilience Profile©

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A PSYCHOMETRIC ANALYSIS OF THE LEADER RESILIENCE PROFILE©

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A DISSERTATION

Submitted to the graduate faculty of the University of Alabama at Birmingham,
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy

BIRMINGHAM, ALABAMA

2011

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EDUCATIONAL LEADERSHIP

ABSTRACT

This study assesses the validity and reliability of the Leader Resilience Profile (LRP©), a quantitative survey instrument designed to measure the strength of multiple dimensions of resilience typically evident in leaders. Although content of the LRP© was initially tested for construct validity by a panel of experts, reliability and internal validity were not tested. The current research uses data gathered in a cross-sectional survey to analyze the individual instrument items and the instrument as a whole for internal consistency, validity, and reliability utilizing exploratory factor analysis. The study sample consisted of 327 LRP© surveys completed from January 2011 through August 2011. Demographic data on survey respondents were examined, revealing a sample comprised predominantly of females relatively early in their professional careers. The 72 variables produced a correlation matrix with sufficient positive correlation to continue with an exploratory factor analysis. The final four-factor solution was achieved with maximum likelihood factor extraction and a promax rotation. Retained factors have eigenvalues greater than one, and cumulatively explain 66.64% of the sample variance.

Keywords: LRP, leader resilience profile, leader resilience

TABLE OF CONTENTS

DEDICATION

This dissertation is dedicated to the individuals who create the tapestry of my life. I would not be where I am today without the love, patience, and encouragement each of you have shown me.

ACKNOWLEDGMENTS

The process of completing a dissertation is a feat that cannot be done alone. There are many I would like to thank for aiding me in achieving this milestone in my life.

I will be ever grateful to the members of my dissertation committee for their contributions and time. Dr. Linda Searby, Chair, thank you for not letting me drift too far away for too long a time, and for your advice, wisdom, and counsel. Dr. John Dantzler, Dr. Howard Houser, and Dr. Gary Peters, thank you for your expertise and valuable recommendations. Thank you all for standing with me and seeing this through to the end. I thank Dr. Jerry Patterson for sharing his passion and knowledge about leader resilience with me. This dissertation would not have been possible without you.

There are individuals in our lives who help shape who we are and help make things possible. These are the family, friends, and mentors that assist us through our path of discovery. I would especially like to recognize and thank a small group of those people. Thank you to my mother, Judy Harvey Brown, for instilling the importance of higher education in me, not only with words but by example. Your encouragement, smiles, and love will never be forgotten. To Robert "John Boy" Garrie for his love, support, and helping me blow off steam. I would not have achieved this without you. To Diane Pevsner and Jennifer Breland, we promised we would make it through this together and we did. Thank you for our friendship, ladies, and for sharing this journey with me. Special thanks go to Dr. Donna J. Slovensky for your friendship, mentoring, steadfast support, laughter, and love. When this process seemed too daunting you were there to push me through. I would not have made it without your encouragement.

I am very fortunate to have a life filled with many wonderful friends and colleagues and I thank all of you for putting up with me during this pursuit.

LIST OF TABLES

LIST OF FIGURES

Figure *Page*

CHAPTER 1

INTRODUCTION

The Leader Resilience Profile (LRP©), a quantitative survey instrument, was developed to provide individuals in positions of authority with greater insight into their respective abilities to recover from adversity. The LRP©'s authors suggest that once armed with this knowledge, leaders will be better prepared to not only survive, but thrive, when confronted by chronic or acute crises. These self-aware individuals will then be better equipped to become strong leaders who provide credible guidance with a sustained, long-term, positive impact on the success of their organizations (Patterson, Patterson, Reed, & Riddle, 2008).

The LRP© was first created in 2008 after extensive study in the field of leader resilience led the team of Patterson, Patterson, Reed, and Riddle to the realization that while many researchers have studied the concept of resilience, only a limited number have focused on resilience and leadership as a unified concept. Additionally, the extant instruments designed to measure this construct have limited utility and most fail to measure the entirety of the concept or have been insufficiently validated (Patterson et al., 2008).

In order to create a more comprehensive, reliable instrument, the Patterson team synthesized seminal resilience and leadership literature from across the academic disciplines of business, psychology and education. The intent was to build an Internet-based self-survey specifically designed to identify the dimensions of resilience in the context of leadership (Patterson et al., 2009). Comprised of 73 leadership-related

questions, organized under three themes and 12 subscales, the LRP© typically can be completed in fewer than 30 minutes.

The current research was designed to complete review of the LRP© by testing the instrument's reliability and internal validity. Data gathered in a cross-sectional survey were examined using psychometric analysis techniques, including exploratory factor analysis, to determine the internal consistency, convergent and discriminate validity, and reliability of the individual survey statements and the LRP© instrument as a whole. Findings from this study are expected to aid the leader resilience community in its evaluation of the instrument's utility as a research tool.

Purpose of the Study

The purpose of this research study was to examine the psychometric properties of a relatively new instrument designed to measure the strength of multiple dimensions of resilience typically evidenced in leaders, the Leader Resilience Profile©, developed by Patterson, et al. (2008). Specifically, exploratory factor analysis and other generally-accepted psychometric analysis techniques were used to assess the construct validity and reliability of this survey-type instrument.

Theoretical Framework

In 2009, Patterson, Goens, and Reed suggested that resilience incorporated nine different strengths: optimism, values, efficacy, support, well-being, courage, perseverance, responsibility, and adaptability. Furthermore, the authors suggested that the degree to which each of these strengths is present in an individual may determine the

extent of one's overall resilience and the potential for success or failure in a given venture.

Building upon these concepts, Patterson et al. (2009) postulated that objective assessment and articulation of one's resilience might permit an individual to explore areas of self-development and increase any or all of the nine strengths. By understanding the limitations of personal resilience, an individual could fortify his or her reflexes, gaining advantage before the appearance of adversity.

As Bennis & Thomas (2002) pointed out, those in positions of leadership have been particularly interested in the potential to improve their resilience as a method of increasing their respective managerial skills. Indeed, many leaders subscribe to the idea that their success may, in fact, depend upon their ability to express a level of resilience that allows the larger group to recover from adversity (McFarland, 2009).

Recognizing the value of understanding one's resilience, and the potential for leaders to particularly benefit from this self-awareness, Patterson et al. asked, "How can leaders measure their relative resilience strengths?" (Patterson et al., 2009, p. 4). While individuals have historically employed any of a number of existing survey instruments to gain objective assessment of their respective levels of resilience ahead of crises, Patterson et al. concluded that no current instrument provided a comprehensive measure to serve leaders looking to increase their resilience. In response, the Patterson team created the Leader Resilience Profile©.

The study of resilience specifically among leaders is conceptualized as leadership resilience, and was characterized by Luc (2009) as "a condition and a consequence of the actualization and exercising of leadership in difficult and demanding situations" (Luc,

2009, p. 82). The intersection of leadership and resilience is graphically expressed through a Venn diagram (shown in Figure 1), with the "X" representing those elements of resilience that are related to the leadership role and the importance of resilience to leaders.

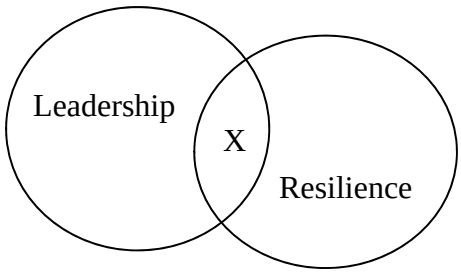

Figure 1. The Intersection of Leadership and Resilience.

An understanding of the boundaries of the "X" is best achieved by summarizing key elements of resilience, leadership, and the integrated concept of leadership resilience. This summary is provided in Chapter 2 Literature Review.

Significance of the Study

Patterson et al. developed the Leader Resilience Profile© after extensive research revealed that, although there were some narrowly-focused survey instruments available, there was no one instrument that provided a comprehensive measure of a leader's personal resilience. In response, the LRP© was designed to be a statistically reliable survey that would address the gap in resilience research by considering resilience and leadership as a unified concept. By measuring the entirety of the concept, Patterson et al.

sought to devise a novel, comprehensive tool that would have broad utility, benefitting leaders by providing them with the information necessary to not only survive but also, "recover, learn from, and developmentally mature when confronted by chronic or crisis adversity" (Patterson et al., 2009, p. 2).

This gap in the associated body of knowledge that Patterson et al. recognized is verified by the current research which has identified only 15 extant assessment instruments that purport to measure one or more dimensions of resilience. Additionally, of the 15 instruments, only eight include evidence of validation by psychometric analysis and, of those, only two are designed to measure dimensions of resilience specific to leaders.

By comparison, the LRP© is comprised of 73 leadership-related survey items, representing a synthesis of the seminal resilience and leadership literature, primarily in the fields of business, psychology, and education. In order to measure the strength of multiple dimensions of resilience in leaders, the survey items have been organized under three themes: Resilience Thinking Skills, Capacity Building Skills, and Resilience Action Skills (Patterson et al., 2008). Those themes were then divided into 12 skill area subscales (see Table 1).

Table 1

LRP© Themes and Subscales

Theme 1 Resilience Thinking Skills	Theme 2 Capacity Building Skills	Theme 3 Resilience Action Skills
1. Understanding of reality	3. Personal values	9. Adaptability
2. Optimism	4. Personal efficacy	10. Perseverance
	5. Spirituality	11. Courageous decision making
	6. Emotional well-being	
	7. Physical well-being	12. Personal responsibility
	8. Personal support base	

Once Patterson et al. had constructed the LRP©, they solicited feedback from a panel of experts to gather insight into the extent to which the survey accurately measured leadership resilience. Although content validity was assessed by the expert panel, reliability and internal validity were not statistically tested.

Conceptual Framework

This researcher's premise is that both resilience and leadership can be measured through survey instruments, that data collected through such instruments can be used by individuals for personal and professional growth, and that a validated instrument that measures resilience and leadership as a unified concept would be a unique and beneficial addition to the existing literature. While the LRP© may be such an instrument, it has not yet been determined to be statistically reliable. Assessing the construct validity and reliability of the LRP© will aid in determining the test's strength and help position the instrument favorably among other similar surveys. Indeed, verifying these psychometric properties is essential to establishing the scientific credibility and research potential of the

instrument. To that end, the statistical evaluation of the survey's reliability, internal consistency, test validity, content validity, and construct validity was the primary focus of this dissertation research.

By examining the individual themes and skill areas postulated by Patterson et al., this researcher will seek to determine if those are the factors that comprise the set of skills needed to demonstrate leadership resilience (see Figure 2). This insight into the Patterson et al. model will help determine the relative importance of the LRP©, contributing to the understanding and study of leadership resilience.

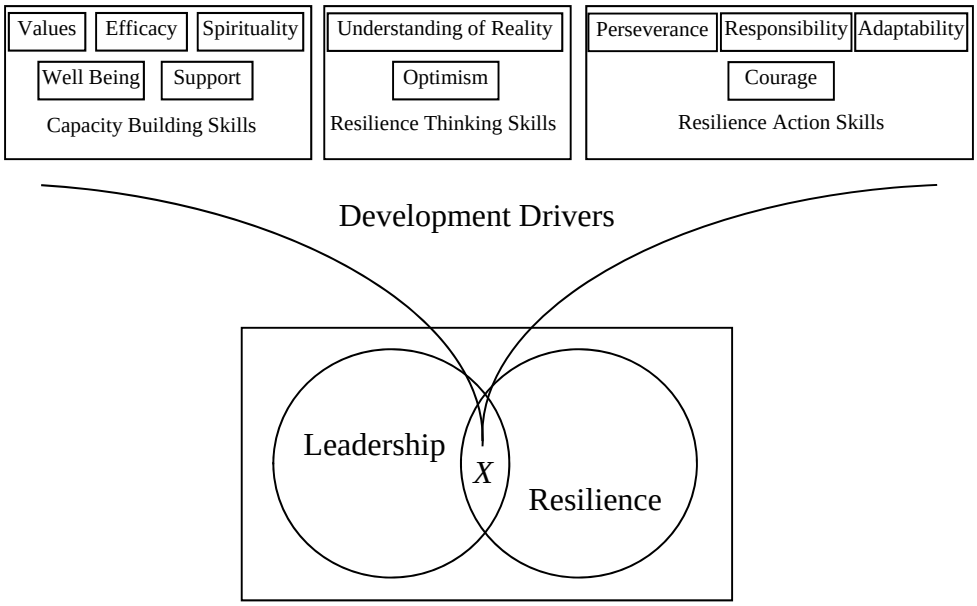

Figure 2. Relationships Among Skills and Themes.

Research Questions

In order to assess the survey's utility and appropriately position the LRP© among other instruments, this study addressed the following research questions:

1. What are the psychometric properties of the LRP© instrument?
2. What is the estimated validity and reliability of the LRP© instrument based on the questions and defined strength categories?
3. What are the internal consistency and test-retest reliability estimates of the hypothesized factors of the LRP© instrument?
4. What is the underlying factor structure among the 73 items measuring the constructs of the LRP©?
5. If reliable factors are identified in the LRP©, how might those factors be interpreted?

Study Limitations

The following are acknowledged limitations of this study:

1. The data were collected using a self-reported survey administered via the Internet. Individual participants may have answered the LRP© survey items in a manner that may introduce a social desirability bias.
2. Participation in the LRP© survey was voluntary and the sample was collected over a limited time period. The sample data may not represent all leaders, particularly those who did not choose to complete the LRP© survey.

Assumptions

The following assumptions are made about this dissertation research study:

1. The individuals completing the LRP© survey accurately reported their thoughts and leadership actions in a straight-forward and honest manner.

2. The individuals completing the LRP© survey constituted a representative sample of leaders.
3. The individuals who completed the LRP© survey have the ability to grow in resilience capability and learn to be more resilient.

DEFINITION OF TERMS

The following terms are used in this study:

Adaptability	A subject's physical and behavioral ability to deal with environmental changes in order to increase chances of survival and/or success
Adversity	An extended period of personal and/or professional difficulty, or an extreme, short term event
Construct validity	How well each item of a psychological test measures or predicts what it's supposed to measure or predict
Coping	A process of managing in difficult circumstances which includes developing strategies to deal with both internal and external stress and to expend effort in the most useful ways while postponing some tasks in order to accomplish the most pressing first
Courage	The mental and/or moral strength to persevere in the presence of adversity
Effective leader	An individual in a position of authority who is able to motivate subordinates to achieve a goal and/or fulfill a strategy
Exploratory factor analysis	A statistical technique for analyzing complex correlations of scores and tracing the factors

	underlying these correlations without *a priori* speculation about the structure
Leader	An individual in a position of authority, e.g., a professor in an academic institution
Leadership resilience	A condition and a consequence of the actualization and exercising of leadership in difficult and demanding situations
Optimism	An inclination to put the most favorable construction upon actions and events
Perseverance	An individual's continued effort to achieve a goal despite adversity
Profound life event	An instance in an individual's life that has great personal impact, such as death of a family member or close friend, birth of a child, or loss of one's job
Reliability	The extent to which a test can be expected to produce the same result on different occasions
Resilience	The ability to recover from or adapt to adversity
Social desirability bias	The tendency of survey respondents choose the response they think others will expect
Stress	Physical and psychological strain which threatens a subject's ability to continue coping with a given difficult situation

CHAPTER 2

LITERATURE REVIEW

Four bodies of literature provide the foundation for this dissertation: leadership, resilience, leadership resilience, and resilience assessment instrumentation. Each of these bodies of work includes elements that are pivotal to an understanding of the integrated concept of leadership resilience.

Defining Leadership

Understanding the importance of leadership resilience requires one to understand the more general concept of leadership and ideally endorse an articulated definition. As with many words, a single definition of leadership remains elusive and multiple definitions exist, some with similarities, some with unique elements (Bass, 2008).

A consensus definition for leadership remains elusive, even within the management and leadership community of scholars. Accordingly, Bennis and Nanus (1986) state, "leadership is like the Abominable Snowman, whose footprints are everywhere but who is nowhere to be seen" (Bennis & Nanus, 1986, p. 20). This sentiment was reminiscent of Stogdill's comment from the first edition of the *Handbook of Leadership,* wherein he stated that "there are almost as many definitions of leadership as there are persons who have attempted to define the concept" (Stogdill, 1974, p. 259). Now in its fourth edition, the *Handbook* continues to provide further evidence of the truth of this statement, currently identifying more than 1,500 definitions of leadership (Bass, 2008).

Historically, the study of leadership was informed in part by Moore's (1924) definition of leadership as "the ability to impress the will of the leader on those led and induce obedience, respect, loyalty, and cooperation" (Moore, 1924, p. 124). When, almost 80 years later, Northouse (2004) stated, "leadership is a process whereby an individual influences a group of individuals to achieve a common goal" (Northouse, 2004, p. 3), it became evident that modern considerations of leadership now included broader concepts. Northouse's statement accurately reflects the attempt by recent researchers to "give more consideration to the dynamic aspects of leadership and to consider it an activity shared between the members of a team, group, or organization, much like communication" (Luc, 2009, p. ix).

Ciulla (1998) expanded the concept of leadership as a shared activity stating, "leadership is not a person or a position but rather a complex moral relationship between people based on trust, obligation, commitment, emotion, and a shared vision of the common good" (Ciulla, 1998, p. xv). This foreshadowed the statement by Kouzes and Posner (2002) that leadership is the "art of mobilizing others to want to struggle for shared aspirations" (Kouzes & Posner, 2002, p.30). Effective leadership, they asserted, can both engage workers and shape the culture and environment of the workplace, ultimately creating an environment where, as Stogdill observed, leadership goes beyond the individual and is about the totality of the workspace – people, processes and relationships (Stogdill, 1974).

In his book, *How the Mighty Fall*, (2001) Collins defines leadership as the leader's ability to motivate or influence others to the point of being a facilitator. While straightforward, this definition is contextually useful in describing the need for a leader to

quickly adapt while shepherding his or her charges through turbulent economic and competitive environments. By altering his or her leadership approach, a leader can provide the best direction, based on the problem encountered. This view is reflected in a number of leadership studies, including that of Hersey and Blanchard (1977), reinforcing the notion that there is no one best way to lead or influence others.

Recent work (Neck & Manz, 2007) addresses the concept and emerging theory of self-leadership. Self-leadership in its simplest form is “the process of influencing oneself” (p. 5) meaning the behavioral and cognitive tactics people use for self-direction and self-motivation to achieve greater personal effectiveness in job or social performance. Self-leadership is dived into three strategies: “Self-imposed strategies”… “Self-reward strategies”… and… “Self-punishment strategies” (Neck & Manz, 2007, p. 20, p. 32, p. 34).

These diverse concepts of leadership form a spectrum of opinion that while illustrating some unique traits, also contains common elements: specifically, the need of the leader to possess critical thinking skills. Regardless of which theory of leadership one embraces, critical thinking abilities are a key mechanism to an effective leadership process (Novelli & Taylor, 1992).

For the purposes of this study the definition grounding the conceptual framework of leadership is provided by Bennis (1994) who stated that "leadership revolves around vision, ideas, direction, and has more to do with inspiring people as to direction and goals than with day-to-day implementation. A leader must be able to leverage more than his own capabilities. He must be capable of inspiring other people to do things without actually sitting on top of them with a checklist” (Bennis, 1994, p. 139).

This definition comes from Bennis' second edition work which focuses on the complexities and paradigm of leadership. The expansive text is composed of twenty-eight leadership cases and experiences that allow the reader to absorb lessons from examples of successful leadership. Specifically, Bennis discusses the challenges associated with leadership, the role of leadership failure, the importance of knowing oneself, cultural awareness and the impact it has on leadership, the need to see beyond the here and now, the importance of operating on instinct, how to learn and improve from adverse experiences, and the crucial role of the follower. The type of leader described by Bennis embraces the challenges of change and is willing to work to overcome the barrier presented by change.

Leadership Theories

Given the wide span of definitions available, it is perhaps not surprising that multiple theories and models have emerged to help explain leadership. Among those theories, several stand as significant contributions to the field and they are summarized here to lend perspective to the available body of knowledge.

Trait Theories

Trait theory is rooted in the belief that distinct behavioral patterns, or traits, including extroversion, openness, neuroticism, agreeableness, and conscientiousness are common among personality types and can be evaluated to predict future conduct. When applied to leadership, trait theory is often synonymous with Great Man Theory, the concept that highly influential individuals, so-called "Great Men," share common

attributes that make them particularly well suited to utilize social power. Characteristics typically examined in these studies include position within society, level of education, gender, ethnicity, and role of religion (Whittington, 1993).

Early subscribers to this theory included Wiggam (1931), who advanced the idea that intermarriage among the fittest individuals produces a biologically superior class, uniquely endowed with the character traits necessary to elevate them to positions of authority over their subordinates. "Thus, an adequate supply of superior leaders depends upon a proportionately high birth rate among the abler classes" (Stogdill, 1974).

More recent research has placed a greater emphasis on identifying the particular traits common to leaders, rather than linking Great Men through genetic lineage. Particular importance has been placed upon the qualities of integrity, self-confidence, dominance, sociability, persistence, extraversion, agreeableness, intelligence, and conscientiousness. The research of Judge et al. (2002) and Northouse (1997) indicates that a significant relationship exists between these traits and leadership (Gill, 2006).

Great Man theory also considers the environment in which the individual exists as essential to realization of one's ability. As Whittington (1993) notes, "social structures provide people with the potential for leadership," (pp. 184-185) making it possible for the individual, predisposed to leadership, to translate that potential into actuality.

Intelligence, a commonly acknowledged characteristic of leaders, is thought to have multiple dimensions. One important aspect is intrapersonal intelligence (Gardner, 1983), or the capacity for self-awareness. Leaders who reflect on their own thoughts and feelings, and understand how their personal knowledge and values contribute to self-motivation, are empowered to better direct their own lives and careers. This self-

awareness, developed over time as the leader learns from an inward focus, allows leaders to trust their instincts in challenging situations.

Emergent Leadership Theories

Emergent Leadership Theory suggests that an individual with the necessary characteristics and skills will naturally emerge as the leader of his or her group. This emergence will occur, it is suggested, regardless of any formal appointment or hierarchy, because the individual possesses the innate ability to lead. "Likely to be viewed as the most prototypical of the group" (Hogg, 2001, p. 204) the emergent leader is dependent upon the interaction with his or her followers and the ability to conform to the expectations of the group.

In considering the concept of emergent leaders, Greenleaf (1977) developed the theory of Servant Leaders to explain why certain individuals rise to positions of authority. Building upon classical references, the concept of servant leaders suggests that endowed with aptitude, certain individuals will assume a mantle of responsibility to provide their followers with an enhanced sense of meaning and value. The leader will, in effect, serve the needs of his or her followers.

Greenleaf (1977) further delineated the responsibility inherent in a natural leader along two tracts - strong leaders and strong servants. Leaders establish the direction and give orders to enforce their decisions. Servants view leadership as an opportunity to enrich their followers. While natural leaders express assertive and domineering qualities to attain a personal goal, natural servants are free of that drive, often instead seeking an altruistic aim and engendering an enhanced level of trust from others.

Leadership Style Theories

Leadership style theories center upon the actions of leaders rather than their individual traits. Proponents assert that by examining a leader's methods, procedures and successes, one can measure the effectiveness and impact of that leader. In this case, what the leader produces is of greater importance than whom he or she is, and how that person became a leader. While Statt (2000) cites Likert's leadership styles as being categorized into four classification systems for use in organizations as "exploitative autocratic," "benevolent autocratic," "consultative," and "democratic" (p. 119), they can practically be divided into two halves: 'concern for task' (production orientation) and 'concern for people' (employee orientation) (Katz, 1950, 1951). This suggests that when one balances his or her concern for the task at hand, with concern for the people who will be fulfilling that task, the leader is performing at an optimal level to achieve success.

The Psychodynamic Theory of leadership explores the role of the intrapsychic and interpersonal behaviors of leaders and followers in shaping a given organization. Departing from the view of people as a solely logical, rational, unified group dedicated to organized objectives, psychodynamic theory considers the individual, recognizing that obscure motivations often drive a leader and a follower. Dependent upon an understanding of both oneself and others, this concept requires each pair of leaders and members to be considered separately (Gill, 2006.) The relationship between a leader and a follower, that leader's appreciation of the follower's motivations, and the effective exploitation of the follower's personality contribute to the leader's ability to provide direction and guidance.

Contingency Theories of Leadership

Contingency theories of leadership assert that each situation is unique and the most flexible leaders will enjoy the greatest successes. This approach recognizes no one best style of leadership, instead emphasizing the leader's ability to adapt his or her style to the current situation despite success with a particular style in a previous situation (Bass, 2008).

Fiedler's Contingency Model (1967) expands upon the basic tenets of contingency theory, postulating that success in leadership results from the interaction of a given leader's style with the favorableness of the specific situation at hand. Fiedler's Model is unique in suggesting that a leader's style and personality are relatively stable and not easily adapted to every situation. In cases where the leader and situation do not 'match,' Fiedler suggests that either the situation must be changed or a new leader, possessing the desired style, must be found.

Fiedler's contingency theory is further developed through House's (1996) Path-Goal Theory that recognizes how employee motivation affects the choice of leadership style chosen. By understanding employee motivation, the leader is able to clarify the path to success, inspiring the individual to achieve specific personal goals that stimulate satisfaction and ultimately fulfill the leader's own goals.

Situational Leadership Theory (Hersey & Blanchard, 1977), like other contingency theories, suggests that there is no single best style of leadership. This model asserts that effective leadership is dependent upon the specific situation and the relative maturity of those being led. A follower's level of maturity, or readiness, indicates his or her knowledge of a given task and ability to carry that task to completion. Accordingly,

the effective leader must "adopt a directive or 'telling' style," (Gill, 2006, p. 48) to accommodate the subordinate's ability. Over time, the specific telling style utilized by the leader is expected to change as the employee continues to mature.

Reddin's (1987) 3-D Theory of Managerial Effectiveness builds upon the flexibility of situational and contingency theories, postulating four distinct styles of management with efficacy dependent on the situation. The major contribution of this work is Reddin's 3-D Model of Leadership, a relatively simple diagram designed to indicate the best management style for a given scenario.

Transformational Leadership Theory

Although *The Transformational Leadership Report* (2007) credits J.V. Downton with introducing the term "transformational leadership" in a 1973 book, it is Burns (1978) application of the term in the context of political leadership that is relevant to this study. Of particular interest is Burns' conceptualization of transformational leadership as a process rather than demonstrated behaviors, and his belief that such a process will change individuals as well as the organization. Bass (1985) extended Burns' work to focus on the effect this leadership approach has on the followers, in particular, the trust and respect for the leader required to achieve a team goal focus.

Transformational theory suggests that empowerment is of primary importance to leaders looking to challenge themselves and their respective followers. By enabling "one of the four I's: individualized consideration, intellectual stimulation, inspirational motivation and idealized influence," the transformational leader charges his or her followers "to transcend their own self-interest for the greater good of the group" (Gill,

2006, p. 52). These newly empowered individuals are inspired to perform beyond expectations, to achieve goals that previously seemed out of reach. A visionary or charismatic leader may further inspire followers to excel through the manifestation of his or her personality (Weber, 1947).

Qualities and Characteristics of Leaders

Understanding the concept of leadership requires exploring descriptions of traits, behaviors, and classical models of leadership. What qualities, traits, and characteristics make a leader successful? Many have sought the answer to this question but there is no one definitive list accepted by educators, researchers, or practitioners. Leaders have powerful effects on the organizations they lead. Because of this fact, many researchers have tried to define leadership traits while trying to define the relationship between the characteristics and the success of a leader.

Stogdill (1948) reviewed 124 trait studies in the seminal work *Personal Factors Associated with Leadership* derived from literature published from 1904 through 1948. These factors focused on main traits such as active participation, facilitation of others to achieve goals, intelligence, attention to the needs of others, task focus, initiative, problem resolution, self-confidence, accepting of responsibility, and the level of control desired. Additionally, Stogdill reviewed fifty-two leadership studies from 1945 to 1974 and identified an additional twenty-six general factors which appeared in at least three or more studies as the various qualities and abilities leaders needed to possess (1974, pp. 92-97). These reviews conducted by Stogdill indicated that there is no specific set of traits that would indicate a strong leadership capability for any person in which the traits were

observed. His findings indicated that it is possible to define a set of traits and characteristics for a good leader, but that those traits would change as the leadership situation changed.

Kouzes and Posner (2002, pp. 24-27) identified more than 225 different values, traits, and characteristics from surveys of more than seventy-five thousand individuals. Northouse (2009) has developed a leadership trait questionnaire to aid leaders in identifying their personal strengths and weaknesses. These studies are merely examples; through these and many other studies some traits and characteristics of "successful" leaders have emerged and gained broad consensus.

Many of the identified traits and characteristics, such as honesty, adaptability, vision, ability to inspire, courage, perseverance, and self-control suggest that a leader must be able to accept and face reality the way it is, not how he or she wishes it were (Welch, 2001). Through Stogdill's review of the many trait studies he identified that leaders are "characterized to an outstanding degree by persistence in the face of obstacles, [the] capacity to work with distant objects in view, [the] degree of strength of will or perseverance, and [the] tendency not to abandon tasks from mere changeability" (Stogdill, 1948, p. 50). This statement indicates that resilience was recognized as an important leadership skill in early management research.

Resilience

Individual leaders may encounter periods of adversity, change, difficulty, and stress during a career. How one reacts to such events may well determine his or her success in a given job position or leadership role.

A seminal work in the study of resilience was a longitudinal study conducted by Werner and Smith (2001). The study evaluated five hundred children born in 1955 at predefined ages through age 40. The results of the Werner and Smith study identified several significant personal factors that allowed the children to overcome adversity. Personal factors included social responsibility, adaptability, tolerance, good communication skills, positive self-esteem, and an orientation on achievement (Werner & Smith, 2001, 2005). Although the Werner and Smith study began with children as subjects, the researchers followed these children into their adult years. The findings from this study provide a foundation of information about personal factors associated with resilience: social responsibility, adaptability, tolerance, good communication skills, positive self-esteem, and an orientation on achievement, that relate to the nine resilience strengths utilized by Patterson and colleagues (2009) in the Leader Resilience Profile instrument.

The information provided by this research supports the idea of the relevance of resilience and personal strengths to personal and work success and demonstrates the success impact of positive capabilities and attributes rather than failure attributes of individual weaknesses (Werner & Smith, 2001, 2005).

Developing the capacity for resilience is vital for leaders to provide effective guidance to individuals about how to face and recover from or adapt to adversity or change (Luthans, 2002). Resilience has been acknowledged as one of the critical skills needed by leaders (Bennis & Thomas, 2002). Conner (1992) defines resilience as "the ability to demonstrate both strength and flexibility in the face of frightening disorder…[and] the internal guidance system people use to reorient ourselves when

blown off course by the winds of change" (p. xv). Stern (2003) in his report on the ten characteristics of mental toughness identifies resilience as an ability to recover from setbacks due to the increased determination to succeed. He states that it is not the actual event being encountered that matters but how an individual reacts and copes with the event.

George Vaillant in *Wisdom of the Ego* (1993) describes how the defenses in the mind work and how these defenses evolve and change over time and change us as individuals. He refers to resilience as the "self-righting tendencies" of an individual to "bend without breaking and the capacity, once bent, to spring back" (1993, p. 248). In order to move forward past these "bending" events an individual must garner inner resources for coping with and even growing from these stressful and potentially damaging events. In essence they must exhibit resilience.

Vaillant's definition will be used as the first part of the definition for resilience adopted for this study and presented at the end of this chapter. Variations of Vaillant's phrasing constitute the most common and consistent definition of resilience found across the literature: the ability to recover from or adapt to adversity (Coutu, 2003; Glantz, 1999; Greene & Conrad, 2002; Neenan, 2009; Patterson, 2005; Siebert, 2008). Whether facing personal or professional adversity, how we "bounce back" determines success or failure (Coutu, 2003, Neenan, 2009). Coutu (2003) promotes the concept of resilience as "a reflex, a way of facing and understanding the world that is deeply etched into a person's mind and soul" (p. 17).

Coutu's definition will be used as the second part of the definition for resilience adopted in the study. An objective assessment and articulation of a leader's resilience

level allows the individual in a leadership role to explore potential areas of self-development to strengthen that reflex to their benefit when adversity or challenge strikes. Coutu states that "resilient people share three traits: acceptance of reality; a deep belief that life is meaningful; and an uncanny ability to improvise" (Coutu, 2003, p. 2).

The ability to rebound from challenging situations is important for all persons from a social perspective, but is especially important for those individuals working in leadership positions. Research conducted by Patterson and colleagues (2009) suggests that resilience incorporates nine different strengths – optimism, values, efficacy, support, well-being, courage, perseverance, responsibility, and adaptability – that in varying levels determine the extent of one's overall resilience. They defined a resilient leader as an individual who "demonstrates the ability to recover, learn from, and developmentally mature when confronted by chronic or crisis adversity," (p. 3) and who handles the pressures of adversity while maintaining the nine different strengths suggested by their research. Patterson and Kelleher (2005) claim, "It's not so much what you do. It's how you think about what you do that makes all of the difference. Your interpretation of the reality of the storm and your interpretation of your future after the storm strongly predict your ability to come through the storm in a better place" (p. 10).

Leadership resilience has become a focused strategic area of development for leaders, so they will be prepared when challenge and adversity strike. Resilience in a leader is not an end in itself; it is seen more as a path to developing a capacity for accomplishment in the face of adverse conditions. Coutu, a psychology and business researcher, promotes the concept of resilience as "a reflex, a way of facing and understanding the world that is deeply etched into a person's mind and soul" (Coutu,

2003, p. 17). An objective assessment and articulation of a leader's resilience level allows the individual in a leadership role to explore potential areas of self-development to strengthen that reflex to their benefit when adversity or challenge strikes.

Sutcliffe and Vogus (2003) state that "resilience is the capacity to rebound from adversity strengthened and more resourceful" (p. 97). By increasing inner focus on well-being and professional development, potentially one can strengthen the human foundation in the nine strengths proposed by Patterson, et al. (2009), and be prepared to face and rebound from adversity. In addition to increasing well-being a leader may also need the ability to employ several styles of leadership to have a positive impact on an organization. Based on the studies of Around-Thomas (2004) "resilience may be the attribute most needed today by…leaders and organizations" (p.1). In turbulent economic times the work environment is ever changing and a leader may have to rethink his or her leadership role in order to reshape and influence an emerging environment. Around-Thomas further states that resilient leaders should improve their ability to employ a variety of leadership styles. By moving "seamlessly between different styles from one situation to the next" the resilient leader is able to "promote organizational resilience" (2004, p. 4).

A key leadership strategy is a resilience focus. Hamel (2003) states that resilience is the "ultimate competitive advantage in the age of turbulence – when organizations are being challenged to change more profoundly, and more rapidly, than ever before" (p. 13). Thus, for a leader to invest in identifying his or her resilience strengths and weaknesses is to invest in the organization's strategy for success. When a leader identifies his or her leadership goals, develops an understanding of resilience, and identifies personal

leadership resilience strengths and weaknesses, a positive association between leadership and resilience can occur if individuals focus their leadership development efforts toward increasing personal resilience levels. Whether facing personal or professional adversity, how we bounce back determines success or failure (Coutu, 2003).

Leadership Resilience

Conner (1992) states that how well leaders absorb the implications of change dramatically affects the rate at which leaders successfully cope with the challenges they face. Based on the writings of Welch and Welch (2005) assessment of individuals for a leadership position should include evaluation of the characteristic of 'heavy-duty' resilience. "It is so important that a leader must have it going into a job because if she [*sic*] doesn't, a crisis time is too late to learn it" (Welch & Welch, 2005, p. 90). Leadership resilience has become a focused strategic area of development for leaders, so they are prepared when challenge and adversity strike. The structure of change model shown in Figure 3 (Conner, 1992) states that a focus on resilience is most critical to successful change which lies at the core of structured change.

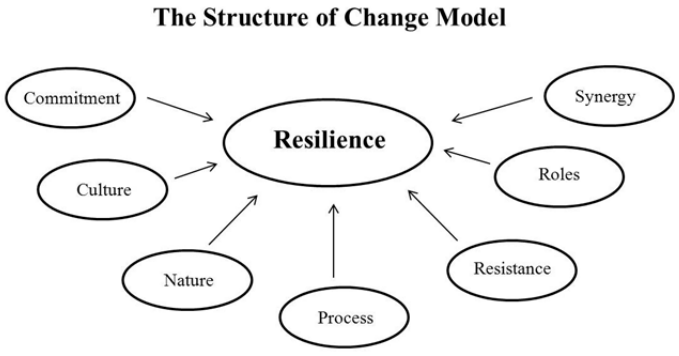

Figure 3. The Structure of Change Model (Conner, 2006, p. 69).

The leadership actualization model developed by Luc (2009) shown in Figure 4 includes seven main lines of strategies. The fourth strategy is focused on building leadership resilience. Luc states that "the main lines for development of resilience stem from four key areas: personal, interpersonal, professional, and social" (Luc, 2009, p. xiii).

Figure 4. Luc's Leadership Actualization Model (2009, p. xv).

Patterson et al. (2008) identified three broad skill sets associated with leadership resilience. These authors state that "resilience thinking skills, capacity skills, and action skills" (p. 28) are all required of a resilient leader. Through a decade of research, Patterson and colleagues identified that resilience fluctuates infrequently; instead occurring slowly over time through what they identified as the five phases of the resilience cycle. The resilience cycle is shown in Figure 5.

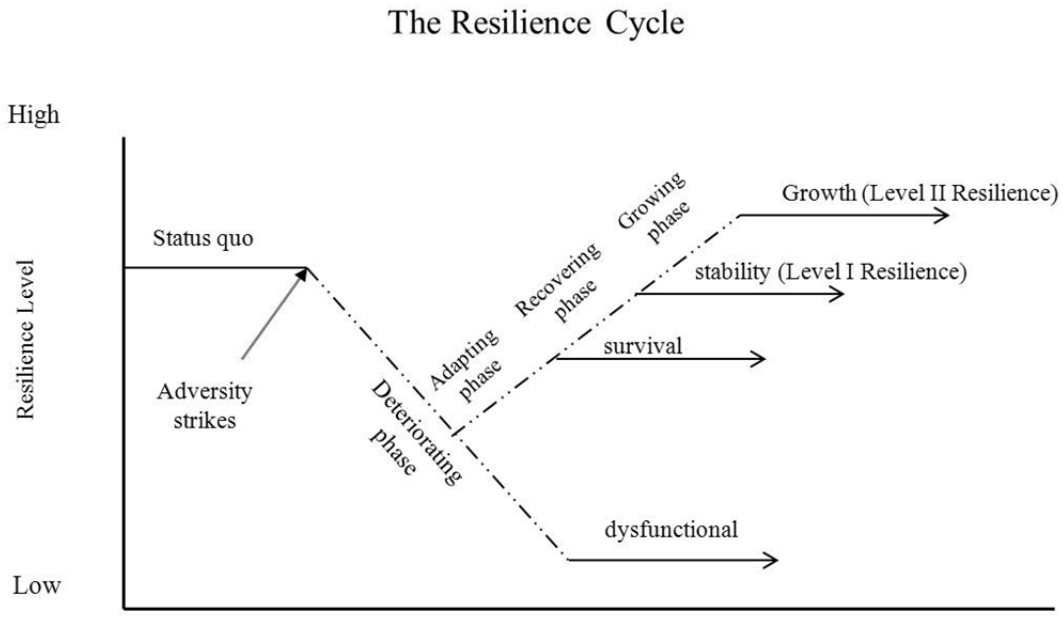

Figure 5. Resilience Cycle (Patterson et al., 2009).

The work of Reivich and Shatte (2002) has shown that resilience is more than an individual's capability of overcoming difficulty; it is also a skill that enables an individual to aid those around him or her to grow as well. This expectation of "developing others" is relevant to the leadership role and the direct link with the resilience concept is important (Reivich & Shatte, 2002, p. 5). The research by Coutu supports this based on her statement that an "increasing body of empirical evidence shows that resilience – whether in children, survivors of concentration camps, or businesses back from the brink – can be learned" (Coutu, 2002, p. 48). With acknowledgement of the challenges and stresses faced in leadership, Reivich, Shatte, and Coutu (2002) conclude that resilience is a valuable skill to possess. They state that leaders need to develop a healthy "resilience quotient" to succeed in today's complex

work environments (Reivich & Shatte, 2002, p. 33). When a leader identifies his or her leadership resilience strengths and weaknesses, a positive association between leadership and resilience can occur if individuals focus their leadership development efforts toward increasing personal resilience levels. Identifying personal resilience strengths and weaknesses is aided by use of standardized instruments that focus inquiry toward the desired characteristics. As with all areas of measurement, the validity and reliability of the measuring instrument is pivotal to the value of the information derived from the assessment. However, identifying a "good" or "the best" instrument can be challenging.

Resilience Assessment Instruments

The empirical literature related to resilience provides a foundation for understanding the concepts underlying the Leader Resilience Profile© (Patterson et al., 2009) which was analyzed for validity and reliability in this study. Each of the selected works discussed here provided points of understanding. Publication databases indexing literature in the management, leadership, psychology, and resilience domains were searched to identify instruments purporting to measure one or more dimensions of personal resilience. Preliminary review of abstracts of identified articles was conducted to eliminate those addressing children or other subgroups that could not be considered related to individuals in leadership roles.

Fifteen assessment instruments were located that were reported as measuring individual resilience levels. These instruments are described by title, developer, scope, intended use, and a brief assessment of their scientific rigor. Key elements of these instruments are summarized (see Table 2) following the discussion.

Resilience 360 (2002), developed by Hansen in conjunction with the Resilience Institute, is a leadership assessment tool that allows leaders to compare and contrast a self-assessment with the assessment of peers, direct reports, and clients. Feedback is provided based on twenty-nine competencies related to resilience. A behavioral score and personal comments related to the individual's strengths and suggested development needs are provided. The assessment instrument covers five disciplines related to physical vitality, stress mastery, performance mindset, leadership and influence. Based on information provided by the Resilience Institute, the overall reliability analyses suggest that the twenty-nine subscales are reliable and the assessment scores consistently. The *Resilience 360* assessment instrument is presently in use in the field.

The *Resilience Test* (1996) delivered by QueenDom.com in conjunction with Discovery Health has developed a ten item assessment instrument that evaluates an individual's attitude and the way an individual approaches problems. The score suggests whether an individual should improve his or her coping strategies. The *Resilience Test* assessment instrument was established in 1996 and is presently in use. Information about validity and reliability assessments was not available.

The *Hardiness Test* (2009) delivered by *Psychology Today* is a forty-five item assessment instrument that purports to evaluate how an individual reacts to challenges, stress, and adversity. The results of the assessment provide an individual with a psychological hardiness score. A simple validation study utilized a Cronbach's alpha to show a positive correlation among the items on the instrument (Hardiness Test, 2009). The *Hardiness Test* instrument is presently in use in the field.

The *Resilience Test* (2003) delivered by PsychTests AIM, Inc., is a twenty-five item assessment instrument designed to evaluate the capacity of an individual to manage during stressful situations and regain equilibrium in the aftermath. Completing the instrument provides an individual with a summative score and suggestions for building individual resilience levels. A low score on the instrument indicates a poor level of resilience. A high score on the instrument indicates a positive level of resilience. Resilience is defined for this instrument as an individual's ability to recover from setbacks and stress encountered. A validity study of the assessment instrument was conducted on 24,397 randomly selected participants. The study included individuals between the ages of 10 and 80 who completed the assessment via the Internet. Based on the findings of St. Jean, Tidman, and Jerabek (2001) the instrument is valid and reliable and demonstrates internal consistency. The *Resilience Test* assessment instrument is presently in use in the field.

The *Resilience Self-Test* (2009) created by Scott and delivered by About.com is a twelve item assessment instrument to evaluate the resilience level of an individual. No validation study was found. The *Resilience Self-Test* is currently in use and available via the Internet at About.com.

The *Resiliency Quiz – How Resilient Are You* (2005) developed by Siebert, author of *The Resiliency Advantage* (2008) is a twenty-item assessment instrument intended to evaluate the resilience level of an individual. Siebert (2008) states that all individuals have the ability to develop resiliency strengths, because all individuals are born with the capacity to develop resiliency. Scoring on the instrument can range from below 50 to above 90. Results are divided into four categories scored in a range from Low score (50

and below), Lower Middle score (50-69 range), Upper Middle score (79-89 range), to High score (90 and above). Achieving a high score indicates the individual's ability to bounce back in times of adversity. It is recommended that individuals conduct their own validity check by asking others who know them well to rate them using the same scale to see how the two rating scores compare. No formal validation study was found. This assessment instrument is presently in use in the field.

The *Resilience Scale* (1993) developed by Wagnild and Young is a twenty-five item assessment instrument that evaluates the resilience level of an individual. Wagnild and Young define resilience as the ability to cope with change and be able to reestablish their balance. The psychometric properties of the *Resilience Scale* for reliability and validity were conducted on a sample size of 810 individuals. Principal component factor analysis and positive correlation of results support the validity and reliability of the scale. Results of the study support internal consistency, reliability, and concurrent validity of the scale as an assessment instrument to test for resilience levels (Wagnild & Young, 1993). The *Resilience Scale* assessment instrument appears to be widely used in the field.

The *Developmental Adversity Quotient* (AQ) (1999) developed by Stoltz is a twenty-item assessment instrument intended to identify the unconscious pattern of how individuals respond to adversity. The AQ uses a normative scale and produces a score ranging between 40 and 200 that suggests whether an individual should improve his or her resilience strategies when faced with adversity and how to assist individuals with becoming more valuable in their work. Stoltz states that an individual's success personally and professionally is "determined by your Adversity Quotient (AQ): AQ tells

how well you withstand adversity and your ability to surmount it" (Stoltz, 1999, p. 7). A technical supplement based on the assessment is available for review but provides no empirical rationale concerning how the instrument was created. The results of a validation study utilizing alpha reliability estimates and inter-factor correlations indicate factorial validity. The AQ survey has an overall reliability of 0.91. The Adversity Quotient assessment instrument is currently used in the field.

The *Resilience Quotient (RQ)* (1995) developed by Russell is a thirty-two item assessment instrument that measures the strength of personal resilience. The RQ uses a normative scale and produces a score ranging between 32 and 192. The assessment instrument is available by request only from Russell Consulting. The Resilience Quotient is demonstrated reliable with a reported Cronbach's alpha of 0.88. A search for additional information concerning validity or reliability located a statement on the website that a factor analysis to verify reliability and validity is currently being conducted (http://www.russellconsultinginc.com/docs/resiliencequotient.htm, 1/3/2010).

The *Survival Profiler Survivor IQ Quiz* (2009) developed by Sherwood is a seventy-five item assessment instrument that identifies the components of an individual's "survivor personality" based on five "survivor types" and twelve essential survivor tools. Sherwood (2009) reports that a validation study has been conducted and that results ensure that the survey is "highly reliable" in measuring the survivor tools and types. No information demonstrating validity or reliability was identified in published sources or online resources.

The *Resilience Factor Inventory* (RFI®) (2002) was developed by Shatté and Revich, authors of the *Resilience Factor* and the original designers of the training

programs currently utilized by Adaptiv Training. The RFI® is a sixty item assessment instrument that measures seven essential components (composure, self-control, problem solving, mastery, optimism, empathy, and reaching out) related to resilience. The work of Reivich and Shatte focuses on building a fundamental foundation of resilience to endure through adversity. These researchers conceptualize resilience as encompassing four stages: Overcoming child-related obstacles, steering through the adversity of life, bouncing back from encountered setbacks, and reaching out to others to aid them in developing their own resilience skills. Reivich and Shatte state that "resilient people have found a system – and it is a system – for galvanizing themselves and tackling problems thoughtfully, thoroughly, and energetically" (Reivich & Shatte, 2002, p. 4).

The authors developed a resilience factor inventory instrument based on seven dimensions of resilience: emotion regulation, impulse control, optimism, causal analysis, empathy, self-efficacy, and reaching out (Jackson & Watkin, 2004, p. 13). The self-rated questionnaire contains a sixty-item resilient quotient measure using a Likert scale of options ranging from "strongly disagree" to "strongly agree." The instrument has been established as valid and reliable. The measure of an individual's resilience is purported to predict performance in these seven dimensions. The criterion validity has been demonstrated through tests of concurrent validity and predictive validity (Reivich & Shatte, 2002).

The *Resiliency Quotient* (2009) developed by Arrizza is a twelve-item assessment instrument purported to measure the resiliency level of an individual. No validity information related to the instrument was available. In fact, Arrizza states that no validity

or reliability studies have been conducted on the instrument. The extent of use of this instrument is not known.

The *Connor-Davidson Resilience Scale* (2003) developed by Connor and Davidson is a twenty-five item assessment instrument intended to measure stress, coping, and adaptation ability. A high score on the assessment indicates a high individual resilience level. Conner and Davidson define resilience as a measure of one's ability to cope with stress. The twenty-five scale questions are rated using a five point response system with 0 equaling "not true at all" and 4 equaling "true nearly all of the time." Possible scores for the full scale range from 0 to 100. The higher the score achieved on the scale, the higher the individual's level of resilience. The scale has been evaluated for reliability, validity, and factor structure. The results demonstrate the instrument has accurate psychometric properties and identifies the differences between individuals with lesser resilience and those with higher resilience (Conner & Davidson, 2003; Ahern, et.al., 2006).

The *Brief Resilient Coping Scale* (2004) developed by Sinclair and Wallston is a four item assessment instrument that measures resilient coping behaviors and how an individual adapts to stress using a five-point Likert scale. Due to the shortness of the scale it only meets the minimum reliability and validity standards. The results demonstrate adequate internal consistency, test-retest reliability, and validity. It is currently being used in the field.

The *Resiliency Attitudes Scale* (1994) developed by Biscoe and Harris provides individuals with scores and information about seven defined areas of resiliency as well as an overall general resiliency score. The instrument contains seventy-two items that

measure the following seven components related to resilience: insight, independence, relationships, initiative, creativity, humor, and morality. The instrument uses a five-point Likert scale ranging from “strongly disagree” to “strongly agree.” Possible scores range from 72 to 360. The results of the instrument provide the user with a total resiliency score interpreted as the higher the total resiliency score, the higher the individual’s level of resiliency and the greater number of protective factors the individual has at his or her disposal.

The *Resiliency Attitudes Scale* has been documented as a valid and reliable instrument by the authors. In order to reduce the response bias, approximately half of the questions on the instrument are reverse coded (Biscoe & Harris, 1994). The authors define resiliency as persistence in working through difficult situations, believing in survival and an improved situation. This definition is consistent with the definitions used to develop the LRP©. The *Resiliency Attitudes Scale* is a widely used resilience measurement instrument that is valid and reliable. Thus, it serves as a strong comparator for the LRP©.

For a developed and implemented assessment survey to be recognized for wide scale distribution and use, the adequacy of the psychometric properties such as reliability, validity, and generalizability need to be established. These fifteen instruments measure various dimensions of resilience and some have been established as statistically valid and reliable for the constructs they purport to measure using psychometric techniques that range from basic descriptive statistics to complete validation studies. Those instruments for which adequate validity analyses have been performed provide useful example

instruments for comparison to the LRP©, which will be evaluated in this study. Table 2 summarizes relevant characteristics of the fifteen instruments.

Table 2

Resilience Assessment Instruments Overview

Assessment Instrument (year)	Created by	Statistical Validity Claimed	Statistical Method for Validation Reported	Number of assessment items	Dimensions Measured
Resilience 360 (2002)	Sven Hansen The Resilience Institute	Yes	Reliability testing shows high alphas; confirmatory factor analysis shows "reasonable" results	Unknown	Twenty-nine competencies related to resilience.
Resilience Test (1996)	QueenDom.com in conjunction with Discovery Health	Yes	Cronbach's Alpha, Mean and SD	10	Individual's attitude and the way an individual approaches problems.
Hardiness Test (2009)	Psychology Today	Yes	Cronbach's alpha showed correlation between the items on the instrument	45	How an individual reacts to challenges, stress and adversity; psychological hardiness score.
Resilience Test (2003)	PsychTests AIM, Inc.	Yes	Descriptive statistics; correlations with various factors; reliability using Spearman-Brown split-half and Cronbach's Alpha; criterion related validity; and construct-related validity	25	How well an individual copes with and recovers from stressors and difficult events. Provides a score and suggestions for building individual resilience levels.
Resilience Self-Test (2009)	Elizabeth Scott	Unknown	No information available	12	Resilience level of an individual.
Resiliency Quiz – How Resilient Are You (2005)	Albert Siebert, Ph.D.	Unknown	No information available	20	Resilience level of an individual.
Resilience Scale (1993)	Dr. Gail Wagnild and Dr. Heather Young	Yes	Reliability testing shows high alphas; item-to-item correlations range from .50 to .75	25	Resilience level of an individual.
Developmental Adversity Quotient (1999)	Dr. Paul Stoltz	Yes	Reported as statistically valid and reliable. Test statistic not available.	25	The unconscious pattern of how individuals respond to adversity based on four subscales.
Resilience Quotient (1995)	Jeff Russell	Yes	Reliability testing shows a Cronbach's Alpha of .88	32	Strength of personal resilience based on eight capacities.
Survival Profiler Survivor IQ Quiz (2009)	Ben Sherwood	Yes	Highly dependable, reliable and accurate.	75	Components of an individual's "survivor personality" based on five types of survivors and twelve

					essential tools.
Resilience Factor Inventory (2002)	Andrew Shatté and Karen Reivich	Yes	Highly dependable, reliable and accurate.	60	Seven components related to resilience.
Resiliency Quotient (2009)	Nick Arrizza	No	No information available	12	Resiliency level of an individual.
Connor-Davidson Resilience Scale (2003)	Kathryn Connor and Jonathan Davidson	Yes	Highly dependable, reliable and accurate. Distinguishes between lesser and greater resilience.	25	Resiliency level of an individual.
Brief Resilient Coping Scale (2004)	Vaughn Sinclair and Kenneth Wallston	Yes	Cronbach's alpha showed correlation exists between the items on the instrument.	4	Measures resilient coping behaviors
Resiliency Attitudes Scale (1994)	Biscoe and Harris	Yes	Reported as valid and reliable. Distinguishes between lesser and greater resilience	72	Provides the user with a total resiliency score based on seven areas of resiliency

Review of extant literature identified several multi-dimensional definitions of resilience that can be applied in the context of leadership. For the purposes of this study, the adopted definition of leadership resilience is that "resilience is both a condition and a consequence of the actualization and exercising of leadership in difficult and demanding situations (Luc, 2009, p. 82)." This definition is consistent with the conceptual model of examining the concept of leader resilience as the intersection of the leadership and resilience domains. Further, it is consistent with the dimensions of the LRP©, which is the focus of this study.

The literature review identified fifteen instruments currently available to individuals and/or researchers that measure various dimensions of resilience. Some of the instruments are more comprehensive than others and some have a stronger leadership focus than others. Some instruments have been validated and others have not. None of the instruments reviewed is valid and reliable in addition to capturing all (or most) of the elements of the leader resilience inherent in the concept. However, the most rigorously

validated instruments were useful comparators for the instrument evaluated in the study – the Leader Resilience Profile© developed by Patterson et al. (2009).

The LRP©, which contains 73 leadership-related survey items, is designed to generate individual resilience strength scores in twelve categories of resilience. Using the statistical techniques described in Chapter 3, this study assessed the psychometric properties of the LRP©, evaluating construct validity and test reliability.

Summary

Whether a leader must be visionary, or charismatic, possessing certain traits or abilities, effective leadership is considered essential to the success of a group. The concept is so integral to society that hundreds of interpretations have been posited and theories abound about how it is best practiced. As a result, while the importance of leadership is widely recognized, there remains no common definition of the concept upon which scholars are able to agree.

Conversely, the trait of resilience, critical for the success of a leader, is generally regarded by scholars as relatively definable, and is typically described as the ability to persevere in the presence of adversity. Regardless of a leader's current level, resilience can be learned and developed.

The study of leadership resilience brings the two concepts together into a blend informed by self-assessment and considered a valuable tool in improving the potential for the success of an individual or group. It is the position of many of the researchers referenced here, that if an individual is able to identify his or her level of leadership resilience, that person may be able to reinforce those areas in which he or she is weak,

ultimately strengthening his or her capabilities to contribute to the likely successful outcome of the group or organization.

To that end, a number of survey instruments have been developed and are presently in use by leaders at all levels to assess their respective levels of leadership resilience. The current research has identified 15 such instruments that purport to provide insight into one's ability to successfully manage a group or organization in times of crisis. While each has its merits, none of the instruments identified has been adequately validated to permit a statistically reliable assessment of a subject's leadership resilience.

The focus of this dissertation was to examine the LRP©, a relatively new instrument designed to measure levels of leadership resilience, and determine the survey's reliability.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

Introduction

The purpose of this research study was to perform a psychometric analysis of the Leader Resilience Profile (LRP©); specifically, to test the instrument's reliability and internal validity and to identify the underlying factor structure. The goal of this research was to complete the validation analysis of the LRP© and determine its usefulness for evaluating an individual leader's resilience strength. If the analysis yields a more parsimonious set of validated items, a modified instrument can be constructed.

As discussed in Chapter 1, Patterson and colleagues developed the LRP© as an instrument to establish the dimensions of resilience in the context of leadership (Patterson et al., 2008). Their work was intended to fill a void in the study of resilience and leadership as a unified concept. While a number of leadership-focused survey instruments have been developed by other groups, none has been adequately validated to permit a statistically reliable assessment of an individual's leadership resilience. To that end, the current research seeks to evaluate and ideally validate the LRP© as such an instrument. This chapter provides insight into the current study's objectives, sample selection process, procedures for data collection, and the data analysis methods.

The LRP© Instrument

Created in 2008, the LRP© was a reaction to the realization by Patterson et al. that, while many researchers have studied the concept of resilience, only a limited number have focused on resilience and leadership as a unified concept. Extensive study

in the field of leader resilience had led the Patterson team to recognize that the extant instruments designed to measure the construct of leadership resilience were of limited use, often failing to measure the entirety of the concept. Additionally, they found that existing instruments were insufficiently validated (Patterson et al., 2008), leaving a gap in useful tools for fortifying leadership resilience.

The LRP© was initially constructed with 62 indicators of leadership resilience, coalesced into 12 subscales. Once Patterson and colleagues had compiled the survey, it was reviewed and pilot tested by a panel of experts in the fields of education and leadership. The panel's feedback was solicited through a specially designed Internet-based survey to determine the extent to which the LRP© accurately measured the leader resilience constructs defined by Patterson. Each panel member was asked to quantitatively and qualitatively rate items using a three-point scale: 1) Required indicator of a resilient leader (A leader cannot be considered resilient without demonstrating this indicator.), 2) Useful but Not Required indicator of a resilient leader, or 3) Not Applicable (This indicator is not relevant in determining the resilience of a leader). Additionally, panelists were encouraged to provide recommendations and comments to better clarify their answers (Patterson, et al., 2008).

After analyzing data from the reviewers, the LRP© was amended to strengthen content validity. This process follows Dillman's (2007) recommendation for four stages of pretesting when designing a survey instrument: 1) review by a panel of experts, 2) interview with members of the target audience, 3) pilot testing the survey, and 4) final check of the survey.

The LRP© in its amended form consists of 73 leadership-related questions, organized under three themes and 12 subscales (Patterson, et al., 2008). Individuals completing the survey are directed to reflect on their own leadership behavior when faced with adversity when selecting responses. A copy of the instrument is included in Appendix A. All of the items on the survey contain statements designed to be desirable to most leaders, but the stated instructions ask that individuals answer based on their actual leadership behavior (LRP Survey, 2009). For each of the 73 items, an individual selects the number indicating where his or her leadership behavior is described on the continuum of a six-point scale. Selecting "1" means his or her leadership behavior is strongly reflected by the statement on the left side of the survey. Selecting "6" means his or her leadership behavior is strongly reflected by the statement on the right side of the survey. Selecting numbers "2," "3," "4," or "5," reflect the positions between the extremes, which represent a less strong feeling (LRP Survey, 2009). After responding to the survey, each participant receives a profile of his or her resilience strength score, with which one might improve deficiencies and ultimately grow stronger in times of adversity (Patterson, et al., 2008). This current instrument and associated instructions were the basis for this validation study.

Research Questions

The objective of this research was to test the LRP© instrument's reliability and internal validity. In order to assess these attributes, the following research questions were established:

1. What are the psychometric properties of the LRP© instrument?
2. What are the estimated validity and reliability of the LRP© instrument based on the questions and defined strength categories?
3. What are the internal consistency and test-retest reliability estimates of the hypothesized factors of the LRP© instrument?
4. What is the underlying factor structure among the 73 items measuring the constructs of the LRP©?
5. If reliable factors are identified in the LRP©, how might those factors be interpreted?

Data were examined using psychometric analysis techniques, including exploratory factor analysis, to determine the internal consistency, convergent and discriminate validity, and reliability of the LRP© instrument as a whole. Findings from this study are expected to aid the leader resilience community in its evaluation of the instrument's utility as a research tool.

Study Sample

Available as a free, anonymous, online self-assessment, the LRP© was designed to be used primarily by educational leaders including professors, administrators, teachers, and staff in K-12 and higher learning institutions. Accordingly, the majority of subjects who have completed the survey to date have been recruited through educational leadership publications, professional conferences, and published books that direct individuals to a dedicated website, "The Resilient Leader" (www.theresilientleader.com), created by the Patterson group. Active recruitment may have been supplemented by

individuals who entered the site serendipitously, having arrived at the site through any of a variety of web navigation techniques. Thus, those completing the survey may have accessed the site purposefully or simply by chance. Once at the site, whatever the method of arrival, an individual can gather information about the general concept of leader resilience and gain access to the LRP©.

Individuals enter answers to the 73 items in the manner described previously. A participant may exit the survey and site at any time, whether the survey has been completed or not. After completing the survey, each participant receives a profile of his or her responses and a resilience strength score (Appendix B). This information is intended to illustrate areas in which one might strengthen skills or change behaviors to ultimately experience more resilience in times of adversity (Patterson, et al., 2008). The results of each survey are recorded and saved electronically in a secure database, available only to the research team. No personally-identifiable data such as name or address are collected, and no identifier is attached to the individual records. These anonymous survey respondents, who voluntarily accessed the site and completed the survey instrument, comprise the sample used in the instrument validation assessment. A total of 327 anonymous individuals completed the LRP© survey over an eight-month period to yield a robust convenience sample for this analysis.

Data Collection

Approval from the University of Alabama at Birmingham (UAB) Institutional Review Board (IRB) to conduct this validation assessment was granted December 30, 2010 (Protocol #E101217019, Appendix C). Although Patterson personally granted

access to the full database of LRP© survey responses, the IRB only authorized use of surveys completed after the approval date and required a statement notifying survey respondents that their data would be used for research purposes. This notification document is included in Appendix B. As with the original LRP© survey, participation was voluntary.

Data for the validation assessment were compiled from 327 survey responders accessing "The Resilient Leader" website for the period of January 2011 through August 2011. Data were downloaded from the server by the database administrator and transmitted to the researcher on a portable drive. Although no personally identifiable data was included in the data set and there was no risk of an individual's data being compromised, the drive and subsequently created data files and printed documents were stored securely in a locked faculty office on the UAB campus. Data stored on personal computers for analysis were accessible only via the owner's secure logon identification and password.

The raw data files were screened for completeness prior to analysis. No responses were incomplete and all 327 surveys were retained for analysis. Item #36 on the LRP© ("When confronted with adversity in my leadership role, I always/never demonstrate the overall strength of being a resilient leader (Patterson, et al., p. 17),") was incorrectly formatted in the web-based survey and scores for this item were not captured. Therefore, the item was removed from the dataset prior to analysis, leaving 72 LRP© items in the research dataset.

Data Analysis

All statistical analyses were conducted using version 18 of the Statistical Package for the Social Sciences (SPSS) program. Initially, general descriptive statistics were calculated from the data. A demographic profile of respondents was created and means and standard deviations were calculated for the 72 captured items from the LRC.

Internal Consistency and Reliability

A coefficient of internal consistency using split-half reliability was calculated to provide reliability information. Guttman Split-Half and Spearman-Brown coefficients and Cronbach's Alpha were calculated and compared to significance standards. Correlations that show a high reliability coefficient of internal consistency suggest that the data collected using the LRP© correctly and reliably measure the concept of leadership resilience as intended.

Factor Analysis

Factor analysis has been widely used as a data reduction technique in psychometric measurement research since the early twentieth century (Johnson & Wichern, 1992). As described by Tabachnick and Fidell (2001), factor analysis is used to "summarize patterns of correlations … and reduce a large number of observed variables to a smaller number of factors (p. 636)." These goals are achieved by employing a series of statistical techniques in a specific sequence. Briefly stated, the steps are as follows: a) select variables to be evaluated; b) conduct correlation analysis to create a matrix of all

variables; c) establish the factors that summarize correlations; d) rotate the factors (if indicated) to improve the solution; and e) interpret the results. Each of these steps will be discussed with specific reference to the LRP© dataset.

Variable Selection

As noted previously, the extant version of the online LRP© survey collected responses to 73 items hypothesized by Patterson et al. (2008) to measure dimensions of resilience in the context of leadership. Scores on these 73 survey items were defined as the variables of interest. However, item #36 was not captured and 72 variables were included in the research dataset.

Although the survey items were organized into 12 logical "clusters" as part of the original survey design, no presumption was made, and no statistical evidence has been established, that these clusters are a parsimonious reflection of the underlying structure of the data. Exploratory factor analysis is an appropriate approach to understand the relationships among these variables and to reduce the data to a more understandable structure.

A sufficiently large sample is important for correlation analysis, although strength of correlations and number of factors can affect the sample size needed. Tabachnick and Fidell (2001) cite Comfrey and Lee's ratings of sample sizes ("…200 [is] fair, 300 [is] good, 500 [is] very good…"). They further note that "it is comforting to have at least 300 cases for factor analysis" (p. 640), but conclude that smaller samples can produce good solutions. In addition to expert recommendations, a statistical assessment of sample size was calculated. SPSS applies the Kaiser-Meyer-Olkin (KMO) Measure of Sampling

Adequacy, which ranges between 0 and 1 as a measure of sampling adequacy. A KMO value of 0.6 or greater suggests the sample size is adequate to conduct a factor analysis (Statistical Consulting Group, n.d.).

Correlation Analysis

Correlation analysis was used to summarize patterns of correlations (Tabachnick & Fidell, 2011) among the variables, i.e., the 72 LRP© item scores. The correlation matrix produced by the SPSS program was reviewed to identify positive relationships among the variables. In order to progress to factor analysis, multiple correlations greater than 0.30 should be present; otherwise the matrix is not appropriate for factor analysis. If correlations are less strong, items may fail to "load" on factors and the data will not be reduced as desired.

Bartlett's test of Sphericity is often used to test for correlations significantly different from zero, particularly if there are fewer than five observations per variable (Norusis, 1990). Bartlett's test assumes multivariate normality and tests the null hypothesis that the correlation matrix is an identity matrix (ones on the diagonal, zeros on off-diagonals). The goal is to reject the null, which would mean that significant correlations existed between pairs of variables. Numerous pairs of significant correlations between pairs of variables should be present to further analyze the matrix. The squared multiple correlation coefficients between a variable and all other variables should also be large.

Once the correlation matrix was established, SPSS applied matrix algebra to calculate a factor matrix (factor loadings), a table of coefficients expressing the

relationship between the items in the LRP© and the underlying factors (Kachigan, 1991; Kerlinger, 1973). Again, these correlation values should be 0.3 or higher, although the range of possible values is -1 to +1.

Factor Determination

"Factor analysis assumes that the observed variables are linear combinations of some underlying source variables (factors) which are [fewer in number than the] observed variables" (Kim & Mueller, p. 8, 1978). These underlying factors are responsible for the covariation that occurs among the observed variables. A variable is assumed to consist of common variation shared with other variables which is termed communality, and unique variation unrelated to the other variables which is termed specificity (Manley, 1992). The remaining unexplained variance is termed error, which is acknowledged in all statistical analyses. The observed correlation is due to the sharing of common factors. The communality is the square of the factor loadings, the correlation between the variable and the common factor. The specificity is [1 – communality] (Kim & Mueller, 1978).

Unlike confirmatory factor analysis, which seeks to investigate hypothesized relationships, exploratory factor analysis does not assume *a priori* knowledge concerning the underlying factor structure. As no theoretical hypothesis about the dimensions of the LRP© was framed prior to data analysis, exploratory factor analysis is the appropriate approach. This method seeks to describe and summarize data by grouping correlated variables together as an expedient means of data reduction (Kim & Mueller, 1978).

Although principal components analysis (PCA) is probably the most commonly used method for initial factor extraction (Kachigan, 1991), it does not factor out unique variance and measurement error (Pett, Lackey, & Sullivan, 2003) and has been described as an "empirical solution" (Tabachnick & Fidell, 2001). PCA forms linear combinations of the observed values with the first principal component designated as the linear combination that accounts for the largest amount of total variance in the sample. Successive components explain progressively smaller portions of total sample variance (Manley, 1986; Norusis, 1990).

The method used to reduce the LRP© data was maximum likelihood. The maximum likelihood method estimates population values for factor loadings by calculating loadings that maximize the probability of sampling the observed correlation matrix from a population (Pett, Lackey, & Sullivan, 2003). This method assumes multivariate normality and results are the same whether the correlation or the covariance matrix is used. One advantage of maximum likelihood over principal components is that the factor estimates with maximum likelihood are independent of the scale of measurement, which is important since the LRP© uses a Likert scale for scoring. The estimates of factor loadings for a variable are proportional to the standard deviation of the variable (Dillon & Goldstein, 1984).

As the goal of factor analysis is data reduction, an important question is: which factors should be retained for further analysis? Certainly, uncorrelated variables that emerge as single item "factors" have little utility. Beyond this condition, two criteria, both conservative in nature, were applied for factor retention. The first criterion specified three conditions: 1) a minimum of three LRP© items loading on the factor; 2) at least one

item loading at 0.50 or higher; and 3) the remaining two items loading at 0.30 or higher. The second criterion, based on Kerlinger's (1973) recommendations, also stated three conditions: 1) the factor matrix should have a loading close to zero for each row, 2) each column should have as many zero, or near zero, loading variables as there are factors, and 3) multiple variables should load on only one factor (but not both) when there are pairs of factors (p. 673).

Eigenvalue size was also considered. In many cases, the average value of all eigenvalues, i.e., one, is used as the cutoff. However, one-variable factors are not of interest and the cutoff may be set as greater than one to avoid this situation (Norusis, 1990; Kim & Mueller, 1978). In this study, only factors with eigenvalues of one or greater were retained.

While a scree test (plot of total variance associated with each factor) is not exact, it is considered to be accurate to within one to two factors. A scree plot is a two dimensional graph showing the distribution of factor loadings on an X axis (factors in ascending order) and a Y axis (eigenvalues in descending order) (Newsom, 2010). Fittingly, it is called a scree plot because it resembles the side of a mountain with debris at the base of the slope (Kachigan, 1991). This image emerges because there generally will be a distinct break after large factors to a trailing of small factors (scree). Identifying the number of factors in the scree plot is based on Brown's (2001) assertion that "researchers should not be concerned with the factors that lie in the debris or rubble at the bottom part of the mountain" (p. 18). If the findings of the factor analysis are consistent with the scree plot, it would indicate a positive outcome, i.e., a good solution.

The cumulative proportion of variance explained also provides an objective rationale for factor inclusion. The factors are assumed to be uncorrelated. Therefore, the total proportion of variance explained by the solution is the sum of variance explained by each factor. The sum of squared loadings for a variable across factors is referred to as the proportion of variance explained by the common factors, which is called the communality of the variable. Communality values can range from 0 to 1. The proportion of variance in the set of variables explained by a factor is the sum of squared loadings divided by the number of variables. The proportion of variance in the solution accounted for by a factor is the sum of squared loadings for the factor divided by the sum of communalities (Kim & Mueller, 1978).

A goodness-of-fit test statistic may be employed to determine the number of factors to retain (Norusis, 1990). This statistic is distributed as a chi-squared variate and is therefore proportional to the sample size. Typically, the number of factors is increased until the observed significance level is no longer small. For large sample sizes, imposing the goodness of fit test may result in extracting a larger number of common factors than is necessary or desirable for data reduction.

Whatever criteria are used to determine the number of factors to be retained, it is important to look at the rotated loading matrix and examine the number of variables that load on each factor. If only one variable loads highly on a factor, the factor is poorly defined. If two variables load on a factor, the pattern of correlations of these two variables with each other and with other variables should be investigated. If the two variables are highly correlated with each other ($r > 0.70$) and relatively uncorrelated with other variables, the factor may be reliable (Tabachnick & Fidell, 1989).

Multiplication of the unrotated factor loading matrix by a transformation matrix results in higher values for high correlations and lower values for low correlations. This emphasizes distances in loadings to facilitate interpretation by reducing any ambiguity. Ideally, each variable loads highly on a single factor and has small-to-moderate loadings on the remaining factors.

Factor Rotation

Factor analysis rotation turns the axes on a plot to better fit the loadings (Anastasi & Urbina, 1997). Extracted factors often are rotated to maximize the loadings, or correlations between the variable and the factor, and to achieve a better interpretation of the factors (Nunnally, 1978). An important point is that rotation does not improve the degree of fit between the data and the factor structure. Kim and Mueller (1978) suggest that the choice of rotation method is not of particular importance as almost any rotation method will serve the purpose of identifying subdimensions in initial factor analysis.

Commonly used rotations are orthogonal and oblique, both of which can be performed with SPSS using varimax and promax respectively. Both rotations were applied to the LRP© data to determine if one approach produced a more robust solution than the other.

An orthogonal rotation moves the axes clockwise while keeping them at a 90-degree angle. It preserves the original orientation between the factors so that they are still perpendicular after rotation. This method is employed in the initial analysis when factors are assumed to be independent (Dillon & Goldstein, 1984). Varimax, the orthogonal rotation method initially used for the LRP© data, is a standard orthogonal approach to

simplify the factors and drive squared loadings toward the extremes -- toward zero and ± 1 -- by maximizing the variance of factor loadings (Manly, 1986).

Oblique rotations permit rotating the factor axes independently so that the numbers of high and low loadings are increased by decreasing those in the middle range (Dillon & Goldstein, 1984). If the factors are correlated, Promax is an appropriate oblique rotation technique to achieve a final solution. The Promax orthogonal rotation method was used to achieve the final solution for the LRP© data.

Results Interpretation

Interpreting the extracted and retained factors is not without problems for two important reasons. First, multiple rotations (after extraction) are available, all accounting for some amount of variance, but with factors defined differently. Second, the only test or the final solution is whether it can be interpreted. Manly's (1984) contention that factor analysis is an "art" is certainly well-taken. Because there are no unique solutions in factor analysis, it is important to evaluate the adequacy of the terminal solution. Several techniques are available to assist the researcher in this process.

The most simplistic test is number of factors. Factors can be interpreted when some variables load highly on them and others do not. Ideally, a variable loads highly on a single factor. The more factors, the better the fit and the more variance explained. However, better fit is achieved at a loss of parsimony.

Examination of communality values may also be useful. If communality values are greater than or equal to one, problems with the solution are indicated. There may be

too few observations or the number of factors may be wrong. Low communality values indicate outlier variables.

Reproducing the correlation matrix also can be used to determine whether the solution is adequate. SPSS constructs a reproduced correlation matrix showing correlations among the extracted values (Statistical Consulting Group, n.d.). In a "good" factor solution, the reproduced correlations will be similar to the original variable correlations and the residuals (differences between original and reproduced correlations) will be minimal (Norusis, 1990). Similar correlation matrices suggest that the extracted factors are good explanators for the original (unreduced) data. The difference between the observed correlation matrix and the reproduced correlation matrix is a matrix of residuals. The number of residuals greater than 0.05 in absolute value indicates how well the fitted model reproduces the observed correlations. Large residuals mean the model does not fit the data well (Tabachnick & Fidell, 2001).

In general, only variables with loadings of 0.30 or greater are interpreted (Tabachnick & Fidell, 2001). After an orthogonal rotation, matrix loadings are correlations between variables and factors. Interpretation requires establishing a criterion for meaningful correlation, arraying variables with loadings exceeding the criterion, and searching for a unifying concept to "label" the factors. After oblique rotation of the pattern matrix loading, a measure of the unique relationship between the factor and the variable is interpreted because values in the structure matrix are inflated due to correlation among the factors. Again the researcher sets a cutoff point and interprets factors above that point.

Summary

This chapter has presented the research design employed to assess the validity and reliability of the LRP© as an instrument to measure a leader's resilience strength, and to determine the important dimensions of the construct of leadership resilience that can be extracted from the data. Under approval from the UAB IRB, data were collected anonymously via a web-based survey.

The dataset collected for the research was evaluated to determine adequacy of sample size and appropriate correlation among observed variables to conduct an exploratory factor analysis. Based on established criteria, including a KMO value of 0.955, the sample size of 327 was determined to be adequate for factor analysis. Multiple positive correlations among the variables and a significant Bartlett's test indicated that the correlation matrix was appropriate for factor analysis as well. Results of statistical analyses and discussion of identified factors is presented in Chapter 4.

CHAPTER 4

RESULTS

Introduction

The purpose of this research study was to perform a psychometric analysis of the Leader Resilience Profile (LRP©); specifically, testing the instrument's construct validity, internal consistency and reliability, and internal validity. The researcher employed statistical methods to identify the underlying factor structures and constructs of the instrument using an exploratory factor analysis. This chapter describes the research sample and presents the findings, results, and interpretation of the analyses conducted to answer the research questions.

Research Questions

In order to fully assess the instrument's utility for its stated purpose, the following research questions were established for this study:

1. What are the psychometric properties of the LRP© instrument?
2. What is the estimated validity and reliability of the LRP© instrument based on the questions and defined strength categories?
3. What are the internal consistency and test-retest reliability estimates of the hypothesized factors of the LRP© instrument?
4. What is the underlying factor structure among the 73 items measuring the constructs of the LRP©?
5. If reliable factors are identified in the LRP©, how might those factors be interpreted?

Description of the Study Sample

The LRP© is a free, web-based survey administered via the Internet at www.theresilientleader.com. Any interested individual may enter the website and complete the survey instrument anonymously. The study sample consisted of 327 anonymous individuals who completed the LRP© survey from January 2011 through August 2011, with the beginning date established after IRB approval for the study.

A summary of the demographic characteristics of the 327 participants is shown in Table 3. The largest category of respondents (42%) was teachers, and the sample was biased toward individuals in the early stages of their careers (five years or less). The sample was comprised largely of females (81%), a finding that is not surprising as the education profession has always been an attractive career option for women. The age distribution supported the early career conclusion, as more than half of the sample were under age 40 (61.1%).

Table 3

Descriptive Statistics of Study Participants (N=327)

Position	Frequency	Percentage
Central Office Administrator	10	3.1
Instructional Support	20	6.1
School Administrator	55	16.8
Teacher	139	42.5
Other (i.e. higher education, etc.)	103	31.5

Years Served	Frequency	Percentage
0 to 5	185	56.6
6 to 10	76	23.2
11 to 15	49	15.0
16 to 20	6	1.8
21 and over	11	3.4

Gender	Frequency	Percentage
Female	265	81.0
Male	62	19.0

Age Range	Frequency	Percentage
20 to 29	106	32.4
30 to 39	94	28.7
40 to 49	83	25.4
50 to 59	41	12.5
60 and over	3	.9

Sample Adequacy

A total of 327 LRP© surveys were collected from January 2011 through August 2011. While Gorsuch (1983) stated that a large sized sample is desirable when conducting factor analysis, he noted that researchers in this field have not "worked out [a] safe ratio of the number of subjects to variables" (p. 332). Tabachnick and Fidell (2001) follow the "general rule of thumb" that 300 cases is sufficient for a "good" sample (p. 588). The sample size of 327 meets this general screening criterion.

As a more robust assessment of sample adequacy, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was calculated. The KMO indicates the proportion of variance in the variables and ranges from zero to one. The closer the value is to one, the stronger the sample variance. Greater variance indicates that the sample is adequate for factor analysis (Annotated SPSS handout). Tabachnick and Fidell (2001) follow a rule of 0.6 as a suggested minimum to indicate sample adequacy, while Pett, Lackey, and Sullivan (2003) recommend a KMO value above 0.70. As shown in Table 4, the sample KMO value of 0.955 exceeds even the more stringent of the standards described. Repeating the KMO test after factor extraction increased the test statistic slightly to 0.958.

Table 4

Kaiser-Meyer-Olkin Measure of Sampling Adequacy

Kaiser-Meyer-Olkin Measure (original 72 items)	0.955
Kaiser-Meyer-Olkin Measure (final 46 items)	0.958

Based on the results of the face value assessment and the KMO statistic, the study sample was deemed to be appropriate for further assessment using factor analysis. This process began with an examination of the variables and generation of a correlation matrix.

Variables and Correlation

As discussed previously, item #36 was incorrectly formatted and was removed from the dataset leaving 72 survey items to be tested for correlation as a test of appropriateness of the data for factor analysis. As noted previously, the full text of the survey items is shown on the sample survey form in Appendix A. The 72 pairs of anchor statements were collapsed into 72 single statements with both anchoring terms shown for ease of visual review. The anchor terms are of the "always/never" and "yes/no" form.

Table 5 shows the mean values for the 72 survey items retained for analysis. Items were scored on a six-point Likert scale, with alternating statements using "six" as the positive anchor and others using "one" as the positive anchor. The items using "one" as the positive anchor are indicated with a double asterisk ("**"). The database was configured to re-calculate scores so that all item responses extracted from the database

show a score of six as the high positive anchor. Thus, all means in the table show a position relative to the highest score for the item.

Table 5

Means and Standard Deviations for the 72 Survey Items

Item	Statement [Anchors]	Mean	Std. Dev.
1	I [always / never] have a positive influence in making things happen.**	4.76	1.315
2	I [don't have / have] an overall sense of competence and confidence in my leadership role.	4.42	1.676
3	I [always / never] use feedback about current reality plus what's possible in the future to make adjustments in my leadership strategies.**	4.71	1.453
4	I [never / always] manage my time so I can achieve rest and recovery.	3.87	1.526
5	I have a track record of [being able / not being able] to take appropriate action, even when some things about the situation remain ambiguous or confusing.**	4.69	1.463
6	I [never / always] accept responsibility for making difficult leadership decisions that may negatively affect some individuals or groups.	4.61	1.509
7	I [always / never] try to prevent current adverse circumstances from happening again.**	5.05	1.409
8	I [never / always] reach out to build trusting relationships with those who can provide support in tough times.	4.86	1.496
9	I [always / never] adjust my expectations about what is possible based on what I've learned about the current situation.**	4.70	1.424
10	I [don't / [do]] demonstrate the overall strength of physical well-being needed to effectively carry out my leadership role.	4.61	1.520
11	I [always / never] take prompt, principled action on unexpected threats before they escalate out of control.**	4.70	1.413
12	When I choose to take no leadership action in the face of adversity, I [never / always] accept personal accountability for this choice.**	4.74	1.503
13	I [always / never] expect that good things can come out of an adverse situation.**	4.59	1.437
14	When adversity strikes, I [never / always] try to learn from the experiences of others who faced similar circumstances.	5.09	1.457
15	I [always / never] demonstrate the ability to put my mistakes in perspective and move beyond them.**	4.70	1.437
16	I [never / always] draw strength during adversity from my connections to a higher purpose in life or causes greater than myself.**	4.61	1.613
17	I [always / never] take prompt, decisive action in emergency situations that demand an immediate response.**	4.94	1.467
18	I [always have trouble accepting / always accept] accountability for the long-term organizational impact of any tough leadership decisions I make.	4.75	1.454
19	I [always / never] pay attention to external forces that could limit what I would like to accomplish ideally.**	4.5	1.416

20	I [always / never] try to offset any relative weakness I have in an area by turning to others who have strength in this area.**	5.14	1.092
21	I [never / always] demonstrate an overall strength of adaptability in my leadership role.	5.05	1.000
22	I [always / never] draw strength from my sense of spirituality in the face of adversity.**	4.87	1.476
23	I [never / always] am able to make needed decisions if they run counter to respected advice by others.	4.64	1.059
24	I [demonstrate / don't demonstrate] an overall strength of making courageous decisions in my leadership role.**	4.88	1.093
25	I [don't have / have] an overall strength of accepting personal responsibility for my leadership actions.	5.29	1.059
26	I always [focus my energy on the opportunities / the obstacles] to be found in a bad situation.**	4.79	1.085
27	I [never / always] have a strong support base to help me through tough times in my leadership role.	5.07	1.213
28	I can [always / never] emotionally accept those aspects of adversity that I can't influence in a positive way.**	4.44	1.227
29	During adversity, I [never / always] feel a deep sense of spiritual gratitude for the opportunity to pursue a calling of leadership.	4.43	1.455
30	I [always / never] make value-driven decisions even in the face of strong opposing forces.**	5.08	0.964
31	I [never / always] gather the necessary information from reliable sources about what is really happening relative to the adversity.	5.24	0.971
32	I [always / never] maintain a respectful sense of humor in the face of adverse circumstances.**	5.26	1.037
33	I [always / never] let adversity in one aspect of my life have a long-term impact on the resilience in other parts of my life.**	4.42	1.392
34	When adversity strikes, I [always avoid] taking action until I've sufficiently gained control of my emotions / [always take] action before I've sufficiently gained control of my emotions.**	4.53	1.233
35	I [never / always] protect sufficient time and space for renewing the spirit.	4.23	1.385
37	I [never / always] demonstrate an overall strength of optimism in my leadership role.	5.03	1.117
38	I persistently refuse to give up in overcoming adversity, [unless] it's absolutely clear all realistic strategies have been exhausted / [even when] it's absolutely clear all realistic strategies have been exhausted.**	4.66	1.326
39	I [never / always] emotionally let go of a goal that I commit to, even at the expense of sacrificing goals and values that are more important to me.	4.13	1.386
40	I [possess / don’t possess] an overall strength of spiritual well-being in my leadership role.**	4.96	1.159
41	I [never / always] seem to look for the positive aspects of adversity to balance the negative aspects.	5.08	1.133
42	I [always / never] seek perspectives that differ significantly from mine, when I need to make tough decisions.	4.72	1.167
43	I [never / always] try to find new or creative strategies to achieve positive results in a difficult situation.	5.18	1.027
44	During adversity, I [always / never] sustain a steady, concentrated focus on the most important priorities until I achieve successful results.**	4.95	1.016
45	I [never / always] demonstrate an understanding of my emotions during adversity and how these emotions affect my leadership performance.	4.89	0.957

46	I [always / never] rely on strongly-held moral or ethical principles to guide me through adversity.**	5.45	0.877
47	I [never / always] seem to accept the reality that adversity is both inevitable and many times occurs unexpectedly.	5.01	1.267
48	I am [always / never] confident that I can learn something from my adversity to help me be stronger in the future.**	5.40	0.973
49	I [always / never] let disruptive forces and other distractions interfere with my focus on important goals and tasks.**	4.56	1.086
50	I [always / never] create time for replenishing emotional energy.**	4.44	1.295
51	I [never / always] seem to be able to privately clarify or publicly articulate my core values.**	4.92	1.186
52	I [always / never] accept the reality that adversity can disrupt my best-laid plans or current projects.**	4.93	1.174
53	I [never / always] take a deliberate, step-by-step approach to overcome adversity.	4.78	1.091
54	I [always / never] demonstrate an overall strength of perseverance in my leadership role.**	5.15	0.988
55	I [never / always] have the overall strength of emotional well-being in my leadership role.	4.91	1.053
56	I [always / never] take leadership actions consistent with what matters most among competing values.**	5.08	0.951
57	I [don't / [do]] possess the overall strength of understanding current reality in my leadership role.	5.21	1.021
58	I [always / never] demonstrate the essential knowledge and skills to lead in tough times.**	4.99	0.981
59	I [never / always] seem to find healthy ways for channeling my physical energy to relieve stress.	4.54	1.264
60	I [never / always] let adverse circumstances that inevitably happen disrupt my long-term focus on maintaining a healthy lifestyle.	4.46	1.279
61	I [never / always] seek feedback to see if my leadership actions are matching my values.	4.77	1.245
62	I [always / never] accept responsibility for making needed changes personally in those cases where I contributed to the adversity.**	5.27	0.900
63	I [never / always] maintain a confident presence as a leader in the midst of adversity.	5.04	1.146
64	I [always / never] quickly change course, as needed, to adapt to rapidly changing circumstances.**	4.88	1.051
65	I [never / always] monitor my personal health factors, then adjust my behavior accordingly.	4.50	1.268
66	I [always / never] demonstrate an overall strength of being value-driven in my leadership role.**	5.19	0.968
67	I [never / always] seem to acknowledge my mistakes in judgment as a leader.	5.27	0.973
68	I [never hesitate to tell / never tell] those I trust about my doubts or fears related to adversity.**	4.97	1.203
69	I am [always / never] determined to be more persevering than before when confronted with the next round of adversity.**	4.74	1.464
70	I [never / always] try to learn from role models who have a strong track record of demonstrating resilience.	5.03	1.55
71	I [always / never] seek the most current, research-based information about how to sustain healthy living in stressful times.**	4.13	1.527

72	I [never / always]s turn to personal reflection or introspection to steady myself during adversity.	4.65	1.573
73	I am [always / never] comfortable sharing with my support base any small wins I achieve along the road to recovering from adversity.**	4.78	1.511

Scale Statements from LRP©

The lowest item mean in this sample is 3.87 with a standard deviation of 1.52 (#4 "I [never / always] manage my time so I can achieve rest and recovery"). All other items scored means of 4.13 or higher on the six-point scale. The largest mean is 5.45 (#46 "I [always / never] rely on strongly-held moral or ethical principles to guide me through adversity"). This finding suggests that the majority of individuals in the sample tended to rate themselves as possessing the characteristics of a resilient leader defined by Patterson et al. (2006).

Significant correlation, or relationships among the variables, must be present for the dataset to be used for factor analysis. Tabachnick and Fidell (2001) recommend correlations greater than 0.30 to proceed with factor analysis. As shown in Appendix E LRP© Correlation Matrix, the correlations among the 72 LRP© survey items include many positive correlations greater than 0.30.

In addition to the general screen for positive associations, Bartlett's Test of Sphericity (see Table 6) was applied to assess the robustness of the correlation matrix. Bartlett's Test employs the null hypothesis that the correlation matrix from the sample is an identity matrix, meaning that no interrelationships (correlations) exist among the variables. The test statistic, a Chi-squared value, for the sample was significant at <0.001, which means there is high confidence that the correlation matrix in this study is not an identity matrix, but has sufficient correlation among the variables to be suitable for a factor analysis.

Table 6

Bartlett's Test of Sphericity

Approx. Chi-Square (Original 72 items)	19006.61
Df	2556
Sig.	.000
Approx. Chi-Square (Final 46 items)	13002.557
Df	1035
Sig.	.000

The preliminary descriptive analyses and correlation analysis provided evidence that the data set was adequate to proceed with the statistical analyses to answer the research questions, including an assessment of the data's factor structure. Analyses and findings related to each research question are presented.

Psychometric Properties, Validity, and Reliability

The psychometric properties of a test or instrument convey how well the test or instrument performs. Statistical assessment of the psychometric properties of an instrument or test provides assurance that measurement is accurate and consistent. Validity means that an instrument correctly measures what it is intended to measure. Reliability means that an instrument gives consistent results with repeated use. Testing for internal consistency and reliability are considered sufficient to draw conclusions about the adequacy of an instrument's psychometric properties (Tabachnick & Fidell, 2001). The literature indicates that a Cronbach's alpha (Cronbach, 1951) value of 0.7 or greater is an appropriate cut point for reliability in social science research (Dillman, 2007).

Internal Consistency and Reliability Estimates

The 73 items in the LRP© are clustered into twelve domains on the survey instrument, as described in Chapter 1. In the research dataset, item #36 was deleted because of formatting problems, leaving 72 items in the twelve domains. If the items in each domain correctly measure the domain construct as the survey designers intended them to be measured, and do so reliably over repeated administrations of the survey, the instrument can be described as internally consistent. Statistical tests employed to measure the internal consistency of the LRP© were Spearman-Brown and Guttman Split-Half coefficients and Cronbach's alpha. When compared to significance standards, the statistics yield information that informs conclusions about the reliability of the instrument.

Split-half reliability testing is useful when data are based on a single instrument with data captured at one point in time (Pett, Lackey & Sullivan, 2003). Alternating survey responses are selected to separate the data set into two halves for the analysis. The SPSS program split the data into odd and even numbered responses to calculate a Spearman-Brown coefficient (statistic = 0.732) and Guttman coefficient (statistic = 0.711). Both coefficients (shown in Table 7) marginally exceed the recommended acceptance value of 0.7 (Pett, Lackey & Sullivan, 2003).

Cronbach's alpha was calculated for each half of the split data as a further measure of instrument consistency. A Cronbach's alpha coefficient, which is the ratio of the true score variance over the variance of the true score plus error, is interpreted when it

falls between the range of zero and one (Cronbach's Alpha, n.d.). Thus, the calculated values of 0.94 and 0.92 are robust indicators of internal consistency.

Table 7

Results for the LRP© Reliability Coefficient

Reliability Coefficients (n=327)	
Spearman-Brown Coefficient Equal Length	0.732
Guttman Split-Half Coefficient	0.711
Cronbach's Alpha – Part One	0.940
Cronbach's Alpha – Part Two	0.920

Factor Analysis

As described by Tabachnick and Fidell (2001), factor analysis is a powerful statistical technique used to reduce large amounts of data to a few factors. For this study, an exploratory factor analysis was performed using the maximum likelihood approach. The maximum likelihood method "estimates population values for factor loadings by calculating loadings that maximize the probability of sampling the observed correlation matrix from a population" (Pett, Lackey, & Sullivan, 2003, p. 112). This method assumes multivariate normality and results are the same whether the correlation or the covariance matrix is used. The factor estimates with maximum likelihood are independent of the scale of measurement, which is important since the LRP© uses a Likert scale for scoring. The estimates of factor loadings for a variable are proportional to the standard deviation of the variable (Dillon & Goldstein, 1984).

The analysis began with the correlation matrix of the 72 survey items (one item was omitted due to a data collection error). Initial and extracted communalities were calculated for each survey item. Table 8 lists the coefficients showing the relationship between the items in the LRP© and the underlying factors.

Table 8

Item Communalities on the 72 LRP© Items

Item	Initial	Extraction
ITEM1_SCORE	.758	.726
ITEM2_SCORE	.623	.573
ITEM3_SCORE	.729	.682
ITEM4_SCORE	.648	.649
ITEM5_SCORE	.741	.686
ITEM6_SCORE	.730	.688
ITEM7_SCORE	.789	.760
ITEM8_SCORE	.769	.749
ITEM9_SCORE	.712	.653
ITEM10_SCORE	.746	.716
ITEM11_SCORE	.762	.739
ITEM12_SCORE	.766	.694
ITEM13_SCORE	.733	.717
ITEM14_SCORE	.828	.808
ITEM15_SCORE	.795	.753
ITEM16_SCORE	.768	.748
ITEM17_SCORE	.796	.771
ITEM18_SCORE	.843	.802
ITEM19_SCORE	.696	.636
ITEM20_SCORE	.506	.436
ITEM21_SCORE	.687	.594
ITEM22_SCORE	.725	.751
ITEM23_SCORE	.663	.640
ITEM24_SCORE	.715	.690
ITEM25_SCORE	.779	.774
ITEM26_SCORE	.647	.597
ITEM27_SCORE	.475	.354
ITEM28_SCORE	.607	.546
ITEM29_SCORE	.637	.574
ITEM30_SCORE	.692	.633

ITEM31_SCORE	.692	.628
ITEM32_SCORE	.469	.334
ITEM33_SCORE	.552	.399
ITEM34_SCORE	.482	.313
ITEM35_SCORE	.726	.725
ITEM37_SCORE	.700	.687
ITEM38_SCORE	.414	.199
ITEM39_SCORE	.454	.282
ITEM40_SCORE	.755	.731
ITEM41_SCORE	.656	.601
ITEM42_SCORE	.549	.418
ITEM43_SCORE	.689	.656
ITEM44_SCORE	.669	.563
ITEM45_SCORE	.689	.610
ITEM46_SCORE	.637	.555
ITEM47_SCORE	.596	.485
ITEM48_SCORE	.765	.744
ITEM49_SCORE	.644	.547
ITEM50_SCORE	.705	.688
ITEM51_SCORE	.615	.513
ITEM52_SCORE	.528	.392
ITEM53_SCORE	.697	.676
ITEM54_SCORE	.710	.682
ITEM55_SCORE	.748	.650
ITEM56_SCORE	.644	.555
ITEM57_SCORE	.747	.673
ITEM58_SCORE	.660	.628
ITEM59_SCORE	.711	.716
ITEM60_SCORE	.710	.642
ITEM61_SCORE	.581	.511
ITEM62_SCORE	.723	.705
ITEM63_SCORE	.683	.621
ITEM64_SCORE	.541	.456
ITEM65_SCORE	.636	.598
ITEM66_SCORE	.765	.731
ITEM67_SCORE	.738	.713
ITEM68_SCORE	.474	.397
ITEM69_SCORE	.766	.736
ITEM70_SCORE	.817	.766
ITEM71_SCORE	.624	.565
ITEM72_SCORE	.758	.673
ITEM73_SCORE	.747	.734

Extraction Method: Maximum Likelihood.

The final solution was achieved with an oblique promax rotation procedure which is an orthogonally rotated solution that is rotated again to allow correlations among factors. The communalities for the "new" factors are the same, but the factors may now be correlated. The loading matrix thus becomes the pattern matrix (Tabachnick & Fidell, 2001). The number of extracted factors to retain was determined by examining the curve of the scree plot and applying Kaiser's Rule (Cliff, 1988), which states that a factor's eigenvalue (the total variance explained by a factor) should be greater than one. No definitive cutoff threshold for factor loadings has been established (Peterson, 2000), although 0.30 seems to be the lowest acceptable value. Nunnally (1978) reminds researchers to consider theory rather than using rigid guidelines to determine the number of factors to retain for the simplest solution. For this study, factor loadings $\geq$ 0.513 were considered acceptable to maximize confidence and were retained for consideration based on the recommendation found in Tabachnick and Fidell (2001) who cite Comfrey and Lee's idea that loadings in excess of .45 with a 20% variance that overlaps is considered average.

The initial analysis revealed a ten factor solution explaining 67.532% of the variance. The extraction communalities for the 72 items were reviewed and item scores with a value less than 0.513 were removed. Table 8 shows the communalities among the original 72 items.

After removal of the items with loadings below 0.513 (Items 20, 27, 32, 33, 34, 38, 39, 42, 47, 52, 61, 64, and 68), the process was repeated on the reduced data. Following the second procedure, an additional 13 items (2, 4, 23, 26, 28, 44, 46, 49, 51,

55, 56, 62, and 71) were removed. Table 9 shows the communalities among the 46 survey items after the final extraction.

Table 9

Item Communalities on 46 LRP© Items

Item	Initial	Extraction
ITEM1_SCORE	.733	.697
ITEM3_SCORE	.703	.664
ITEM5_SCORE	.709	.658
ITEM6_SCORE	.688	.598
ITEM7_SCORE	.759	.742
ITEM8_SCORE	.724	.667
ITEM9_SCORE	.679	.647
ITEM10_SCORE	.722	.678
ITEM11_SCORE	.731	.693
ITEM12_SCORE	.716	.647
ITEM13_SCORE	.696	.635
ITEM14_SCORE	.801	.763
ITEM15_SCORE	.770	.733
ITEM16_SCORE	.738	.688
ITEM17_SCORE	.779	.741
ITEM18_SCORE	.814	.772
ITEM19_SCORE	.669	.618
ITEM21_SCORE	.605	.540
ITEM22_SCORE	.686	.734
ITEM24_SCORE	.654	.573
ITEM25_SCORE	.741	.698
ITEM29_SCORE	.590	.526
ITEM30_SCORE	.625	.547
ITEM31_SCORE	.655	.524
ITEM35_SCORE	.697	.669
ITEM37_SCORE	.637	.573
ITEM40_SCORE	.725	.746
ITEM41_SCORE	.617	.524
ITEM43_SCORE	.627	.542
ITEM45_SCORE	.611	.533
ITEM48_SCORE	.652	.516
ITEM50_SCORE	.633	.564
ITEM53_SCORE	.625	.527
ITEM54_SCORE	.672	.635
ITEM57_SCORE	.708	.670

ITEM58_SCORE	.638	.521
ITEM59_SCORE	.690	.729
ITEM60_SCORE	.649	.611
ITEM63_SCORE	.630	.557
ITEM65_SCORE	.585	.598
ITEM66_SCORE	.712	.658
ITEM67_SCORE	.674	.568
ITEM69_SCORE	.740	.714
ITEM70_SCORE	.787	.714
ITEM72_SCORE	.733	.642
ITEM73_SCORE	.699	.640

Extraction Method: Maximum Likelihood.

Oblique rotations, such as promax, produce both a factor pattern matrix and a factor structure matrix. The pattern matrix indicates the independent relationship between each item and the factors. The structure matrix provides the correlation between each item and the factors that have been extracted and rotated. It is noted that item #41 in the structure matrix has a double loading in factors 2 and 3 but was retained in factor 2 due to the higher loading and subject matter content of the item. Table 10 shows the pattern matrix for the 46-item four- factor solution and Table 11 shows the structure matrix for the 46-item four- factor solution.

Table 10

Pattern Matrix

	Factor			
	1	2	3	4
ITEM14_SCORE	.884	-.036	.025	-.065
ITEM70_SCORE	.856	-.040	.027	-.058
ITEM7_SCORE	.852	-.040	-.093	-.047
ITEM15_SCORE	.846	.066	.070	-.077
ITEM17_SCORE	.841	.074	-.052	-.044
ITEM69_SCORE	.837	.001	-.063	.020
ITEM18_SCORE	.835	.173	-.017	-.111

ITEM8_SCORE	.828	-.054	.057	.034
ITEM73_SCORE	.824	-.108	.071	-.018
ITEM10_SCORE	.824	-.074	.340	-.124
ITEM9_SCORE	.810	-.038	-.013	-.022
ITEM1_SCORE	.809	-.012	-.131	.109
ITEM3_SCORE	.806	-.015	-.055	.071
ITEM72_SCORE	.802	-.006	.053	.034
ITEM13_SCORE	.799	-.079	.002	.117
ITEM11_SCORE	.799	.080	-.121	.009
ITEM12_SCORE	.786	.086	-.014	-.095
ITEM5_SCORE	.781	.079	-.099	.011
ITEM6_SCORE	.762	.071	.049	-.111
ITEM16_SCORE	.756	-.188	.028	.418
ITEM19_SCORE	.754	.040	-.128	.073
ITEM25_SCORE	.087	.871	.016	-.174
ITEM57_SCORE	.036	.856	-.028	-.075
ITEM63_SCORE	-.050	.828	-.138	-.015
ITEM54_SCORE	-.002	.809	-.035	.013
ITEM24_SCORE	-.065	.778	-.089	.073
ITEM58_SCORE	-.076	.753	-.040	.005
ITEM66_SCORE	.030	.738	-.039	.161
ITEM43_SCORE	.032	.728	-.007	.011
ITEM31_SCORE	.035	.727	.008	-.035
ITEM67_SCORE	.073	.717	.090	-.074
ITEM37_SCORE	.024	.701	.097	-.009
ITEM30_SCORE	-.042	.699	-.136	.204
ITEM45_SCORE	-.098	.695	.126	-.063
ITEM53_SCORE	-.059	.690	.096	-.022
ITEM21_SCORE	-.016	.678	.035	.080
ITEM48_SCORE	.140	.540	.123	.122
ITEM41_SCORE	.088	.499	.194	.144
ITEM59_SCORE	.006	.008	.869	-.051
ITEM65_SCORE	-.020	.117	.731	-.068
ITEM50_SCORE	-.058	.017	.728	.018
ITEM35_SCORE	-.044	-.031	.701	.250
ITEM60_SCORE	-.025	.190	.650	.029
ITEM22_SCORE	-.001	.014	.008	.847
ITEM40_SCORE	.010	.262	.029	.694
ITEM29_SCORE	-.098	.189	.075	.581

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.

Table 11

Structure Matrix

	Factor			
	1	2	3	4
ITEM14_SCORE	.870	.134	-.094	-.017
ITEM18_SCORE	.866	.289	-.039	.015
ITEM17_SCORE	.858	.204	-.101	.022
ITEM15_SCORE	.850	.246	.003	.034
ITEM7_SCORE	.849	.069	-.204	-.049
ITEM69_SCORE	.843	.153	-.125	.047
ITEM70_SCORE	.842	.128	-.089	-.013
ITEM11_SCORE	.827	.189	-.143	.048
ITEM1_SCORE	.824	.141	-.162	.103
ITEM8_SCORE	.814	.167	-.027	.083
ITEM3_SCORE	.812	.159	-.102	.092
ITEM5_SCORE	.807	.197	-.118	.058
ITEM9_SCORE	.802	.116	-.110	.006
ITEM12_SCORE	.799	.201	-.072	-.011
ITEM72_SCORE	.798	.207	-.004	.102
ITEM73_SCORE	.794	.095	-.062	.011
ITEM13_SCORE	.790	.145	-.061	.131
ITEM19_SCORE	.778	.165	-.142	.087
ITEM10_SCORE	.772	.222	.183	.027
ITEM6_SCORE	.766	.206	-.021	-.011
ITEM16_SCORE	.740	.181	.030	.389
ITEM25_SCORE	.259	.817	.400	.243
ITEM57_SCORE	.214	.814	.391	.314
ITEM66_SCORE	.199	.799	.412	.490
ITEM54_SCORE	.173	.797	.398	.375
ITEM37_SCORE	.163	.753	.462	.357
ITEM24_SCORE	.111	.751	.355	.395
ITEM67_SCORE	.212	.746	.433	.300
ITEM63_SCORE	.135	.737	.297	.312
ITEM43_SCORE	.187	.735	.378	.348
ITEM21_SCORE	.129	.730	.426	.408
ITEM31_SCORE	.186	.723	.375	.308
ITEM58_SCORE	.087	.718	.365	.334

ITEM53_SCORE	.078	.718	.456	.333
ITEM30_SCORE	.130	.714	.317	.473
ITEM45_SCORE	.034	.712	.477	.304
ITEM48_SCORE	.251	.691	.445	.430
ITEM41_SCORE	.186	.687	.507	.458
ITEM59_SCORE	-.068	.445	.853	.296
ITEM35_SCORE	-.094	.446	.787	.509
ITEM65_SCORE	-.061	.467	.767	.273
ITEM60_SCORE	-.037	.541	.764	.372
ITEM50_SCORE	-.114	.397	.749	.310
ITEM22_SCORE	.054	.412	.349	.857
ITEM40_SCORE	.106	.602	.440	.828
ITEM29_SCORE	-.028	.478	.412	.692

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.

The final analysis produced a four factor solution explaining 66.641% of the variance (see Table 12). These four factors provide the simplest solution based on review of both the structure matrix and pattern matrix. The overall Cronbach's alpha for the 46-item dataset was 0.953 (see Table 13), indicates strong internal consistency among the 46 LRP© items.

Table 12

Total Variance Explained by Four Factor Solution

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	15.709	34.150	34.150	15.176	32.992	32.992
2	11.073	24.073	58.222	10.869	23.628	56.621
3	2.184	4.747	62.970	1.814	3.944	60.564
4	1.689	3.671	66.641	1.375	2.989	60.564

Table 13

Cronbach's Alpha

Reliability Statistics	
Cronbach's Alpha	N of Items
.953	46

Table 14 shows the 46 survey items retained in the four factors following promax rotation. Means and standard deviations are shown, along with the initial and extracted communalities associated with each item. For ease of visual review, the survey statements are combined with anchor descriptors shown in brackets.

Table 14

Descriptive Item Statistics and Communalities

Item	Statement [Anchors]	Mean	Std. Dev.	Initial	Extracted
1	I [always / never] have a positive influence in making things happen.	4.76	1.315	0.733	0.697
3	I [always / never] use feedback about current reality plus what's possible in the future to make adjustments in my leadership strategies.	4.71	1.453	0.703	0.664
5	I have a track record of [being able / not being able] to take appropriate action, even when some things about the situation remain ambiguous or confusing.	4.69	1.463	0.709	0.658
6	I [never / always] accept responsibility for making difficult leadership decisions that may negatively affect some individuals or groups.	4.61	1.509	0.688	0.598
7	I [always / never] try to prevent current adverse circumstances from happening again.	5.05	1.409	0.759	0.742
8	I [never / always] reach out to build trusting relationships with those who can provide support in tough times.	4.86	1.496	0.724	0.667
9	I [always / never] adjust my expectations about what is possible based on what I've learned about the current situation.	4.70	1.424	0.679	0.647

10	I don't / [do] demonstrate the overall strength of physical well-being needed to effectively carry out my leadership role.	4.61	1.52	0.722	0.678
11	I always / never take prompt, principled action on unexpected threats before they escalate out of control.	4.70	1.413	0.731	0.693
12	When I choose to take no leadership action in the face of adversity, I [never / always] accept personal accountability for this choice.	4.74	1.503	0.716	0.647
13	I [always / never] expect that good things can come out of an adverse situation.	4.59	1.437	0.696	0.763
14	When adversity strikes, I [never / always] try to learn from the experiences of others who faced similar circumstances.	5.09	1.457	0.77	0.733
16	I [never / always] draw strength during adversity from my connections to a higher purpose in life or causes greater than myself.	4.61	1.613	0.738	0.688
17	I [always / never] take prompt, decisive action in emergency situations that demand an immediate response.	4.94	1.467	0.779	0.741
18	I [always have trouble accepting / always accept] accountability for the long-term organizational impact of any tough leadership decisions I make.	4.75	1.454	0.814	0.772
19	I [always / never] pay attention to external forces that could limit what I would like to accomplish ideally.	4.50	1.416	0.669	0.618
21	I [never / always] demonstrate an overall strength of adaptability in my leadership role.	5.05	1.000	0.605	0.540
22	I [always / never] draw strength from my sense of spirituality in the face of adversity.	4.87	1.476	0.686	0.734
24	I [demonstrate / don't demonstrate] an overall strength of making courageous decisions in my leadership role.	4.88	1.093	0.654	0.573
25	I [don't have / have] an overall strength of accepting personal responsibility for my leadership actions.	5.29	1.059	0.741	0.698
29	During adversity, I [never / always] feel a deep sense of spiritual gratitude for the opportunity to pursue a calling of leadership.	4.43	1.455	0.59	0.526
30	I [always / never] make value-driven decisions even in the face of strong opposing forces.	5.08	0.964	0.625	0.547
31	I [never / always] gather the necessary information from reliable sources about what is really happening relative to the adversity.	5.24	0.971	0.655	0.524

35	I [never / always] protect sufficient time and space for renewing the spirit.	4.23	1.385	0.697	0.669
37	I [never / always] demonstrate an overall strength of optimism in my leadership role.	5.03	1.117	0.637	0.573
40	I [possess / don’t possess] an overall strength of spiritual well-being in my leadership role.	4.96	1.159	0.725	0.746
41	I [never / always] seem to look for the positive aspects of adversity to balance the negative aspects.	5.08	1.133	0.617	0.524
43	I [never / always] try to find new or creative strategies to achieve positive results in a difficult situation.	5.18	1.027	0.627	0.542
45	I [never / always] demonstrate an understanding of my emotions during adversity and how these emotions affect my leadership performance.	4.89	0.957	0.611	0.533
48	I am [always / never] confident that I can learn something from my adversity to help me be stronger in the future.	5.4	0.973	0.652	0.516
50	I [always / never] create time for replenishing emotional energy.	4.44	1.295	0.633	0.564
53	I [never / always] take a deliberate, step-by-step approach to overcome adversity.	4.78	1.091	0.625	0.527
54	I [always / never] demonstrate an overall strength of perseverance in my leadership role.	5.15	0.988	0.672	0.635
57	I [don't / [do]] possess the overall strength of understanding current reality in my leadership role.	5.21	1.021	0.708	0.670
58	I [always / never] demonstrate the essential knowledge and skills to lead in tough times.	4.99	0.981	0.638	0.521
59	I [never / always] seem to find healthy ways for channeling my physical energy to relieve stress.	4.54	1.264	0.69	0.729
60	I [never / always] let adverse circumstances that inevitably happen disrupt my long-term focus on maintaining a healthy lifestyle.	4.46	1.279	0.649	0.611
63	I [never / always] maintain a confident presence as a leader in the midst of adversity.	5.04	1.146	0.63	0.557
65	I [never / always] monitor my personal health factors, then adjust my behavior accordingly.	4.5	1.268	0.585	0.598
66	I [always / never] demonstrate an overall strength of being value-driven in my leadership role.	5.19	0.968	0.712	0.658
67	I [never / always] seem to acknowledge my mistakes in judgment as a leader.	5.27	0.973	0.674	0.568

69	I am [always / never] determined to be more persevering than before when confronted with the next round of adversity.	4.74	1.464	0.74	0.714
70	I [never / always] try to learn from role models who have a strong track record of demonstrating resilience.	5.03	1.55	0.787	0.714
72	I [never / always]s turn to personal reflection or introspection to steady myself during adversity.	4.65	1.573	0.733	0.642
73	I am [always / never] comfortable sharing with my support base any small wins I achieve along the road to recovering from adversity.	4.78	1.511	0.699	0.640

Scale Statements from LRP©

The factor eigenvalues were examined to confirm the four-factor solution, using the criterion of eigenvalue greater than one as recommended by Tabachnick and Fidell (2001). This criterion was met, as shown by the values presented in Table 15.

Table 15

Eigenvalues for the Four Factor Solution

Factor	Total	% of Variance	Cumulative %
1	15.709	34.150	34.150
2	11.073	24.073	58.222
3	2.184	4.747	62.970
4	1.689	3.671	66.641

Another way of verifying the number of factors is by viewing the scree plot produced by SPSS, and finding for the natural bending point where the curve flattens out. The number of data points above the bend is usually the appropriate number of factors to retain (Pett, Lackey & Sullivan, 2003). The scree plot in Figure 6 shows four factors on the slope before the plotted line levels out.

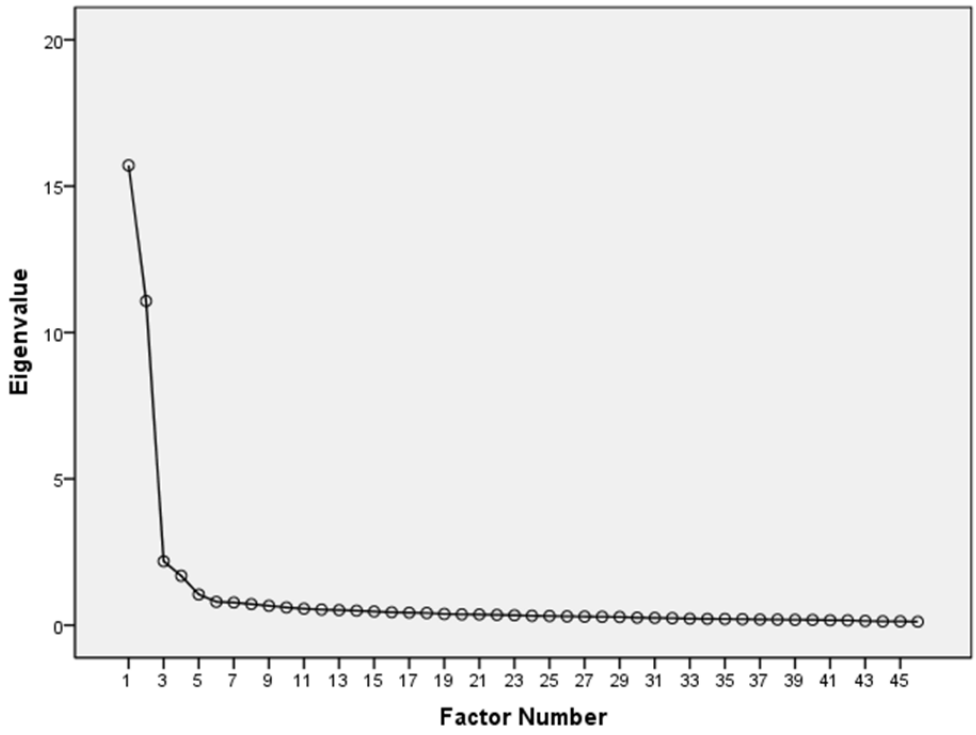

Figure 6. Scree Plot for LRP© Scale Items.

Factor Interpretation

The labels applied to the four factors extracted from the sample data are consistent with the 12 domains defined by Patterson, but no factor is identical in statement content to any domain. The most similarity is found in the fourth factor, Spiritual Resources, which contains only statements from Patterson's spiritual domain. However, not all statements from Patterson's spiritual domain were retained, and some spiritual statements loaded on other factors. Factor 3 Personal Health and Well-being loaded with statements from Patterson's physical well-being (3), emotional well-being (2), and spiritual (1) domains. One statement from the physical domain and two statements from the spiritual domain loaded on factor one. One statement from the

emotional domain loaded on factor 2. At least one statement from each domain loaded on at least one factor.

Of the 46 retained items, 20 items loaded on factor 1. These 20 items (see Table 16) account for slightly more than one-third of the total sample variance (34.15%) and about half of the explained variance (66.64%). Factor 1 is titled Proactive Self-Leadership. Neck and Manz (2007) describe self-leadership as behavioral and cognitive tactics that an individual uses to direct and motivate his or her own behavior. Self-leadership behaviors evident in the statements include prompt, decisive, appropriate, and principled action; accepting responsibility and accountability, and learning from role models and experiences.

Table 16

Factor 1: Proactive Self-Leadership

Item	Statement [Anchors]	Mean	Std. Dev.	Initial	Extracted
1	I [always / never] have a positive influence in making things happen.	4.76	1.315	0.733	0.0697
3	I [always / never] use feedback about current reality plus what's possible in the future to make adjustments in my leadership strategies.	4.71	1.453	0.703	0.664
5	I have a track record of [being able / not being able] to take appropriate action, even when some things about the situation remain ambiguous or confusing.	4.69	1.463	0.709	0.658
6	I [never / always] accept responsibility for making difficult leadership decisions that may negatively affect some individuals or groups.	4.61	1.509	0.688	0.598
7	I [always / never] try to prevent current adverse circumstances from happening again.	5.05	1.409	0.759	0.742
8	I [never / always] reach out to build trusting relationships with those who can provide support in tough times.	4.86	1.496	0.724	0.667

9	I [always / never] adjust my expectations about what is possible based on what I've learned about the current situation.	4.70	1.424	0.679	0.647
10	I don't / [do] demonstrate the overall strength of physical well-being needed to effectively carry out my leadership role.	4.61	1.520	0.722	0.678
11	I always / never take prompt, principled action on unexpected threats before they escalate out of control.	4.7	1.413	0.731	0.693
12	When I choose to take no leadership action in the face of adversity, I [never / always] accept personal accountability for this choice.	4.74	1.503	0.716	0.647
13	I [always / never] expect that good things can come out of an adverse situation.	4.59	1.437	0.696	0.763
14	When adversity strikes, I [never / always] try to learn from the experiences of others who faced similar circumstances.	5.09	1.457	0.77	0.733
16	I [never / always] draw strength during adversity from my connections to a higher purpose in life or causes greater than myself.	4.61	1.613	0.738	0.688
17	I [always / never] take prompt, decisive action in emergency situations that demand an immediate response.	4.94	1.467	0.779	0.741
18	I [always have trouble accepting / always accept] accountability for the long-term organizational impact of any tough leadership decisions I make.	4.75	1.454	0.814	0.772
19	I [always / never] pay attention to external forces that could limit what I would like to accomplish ideally.	4.50	1.416	0.669	0.618
69	I am [always / never] determined to be more persevering than before when confronted with the next round of adversity.	4.74	1.464	0.74	0.714
70	I [never / always] try to learn from role models who have a strong track record of demonstrating resilience.	5.03	1.55	0.787	0.714
72	I [never / always]s turn to personal reflection or introspection to steady myself during adversity.	4.65	1.573	0.733	0.642
73	I am [always / never] comfortable sharing with my support base any small wins I achieve along the road to recovering from adversity.	4.78	1.511	0.699	0.64

Scale Statements from LRP©

Factor 2, labeled Intrapersonal Intelligence, is comprised of 18 items and accounts for another 24% of sample variance. Thus, the first two factors in combination yield 58% of the explained variance for the sample. The survey items listed in Table 17 show a focus on introspection and self-awareness. This factor includes statements from ten of Patterson's twelve domains. Only the domains of emotional well-being and efficacy are not represented. Gardner (1983) describes intrapersonal intelligence as an individual's ability to look inward, reflecting on how his or her thoughts and feelings direct his or her values and behaviors. Individuals are shaped by their past experiences. Leaders who systematically learn through an inward focus are empowered by their self-awareness to choose approaches and make decisions that are consistent with their values and supported by their skill sets.

Table 17

Factor 2: Intrapersonal Intelligence

Item	Statement [Anchors]	Mean	Std. Dev.	Initial	Extracted
21	I [never / always] demonstrate an overall strength of adaptability in my leadership role.	5.05	1.000	0.605	0.540
22	I [always / never] draw strength from my sense of spirituality in the face of adversity.	4.87	1.476	0.686	0.734
24	I [demonstrate / don't demonstrate] an overall strength of making courageous decisions in my leadership role.	4.88	1.093	0.654	0.573
25	I [don't have / have] an overall strength of accepting personal responsibility for my leadership actions.	5.29	1.059	0.741	0.698
30	I [always / never] make value-driven decisions even in the face of strong opposing forces.	5.08	0.964	0.625	0.547

31	I [never / always] gather the necessary information from reliable sources about what is really happening relative to the adversity.	5.24	0.971	0.655	0.524
37	I [never / always] demonstrate an overall strength of optimism in my leadership role.	5.03	1.117	0.637	0.573
41	I [never / always] seem to look for the positive aspects of adversity to balance the negative aspects.	5.08	1.133	0.617	0.524
43	I [never / always] try to find new or creative strategies to achieve positive results in a difficult situation.	5.18	1.027	0.627	0.542
45	I [never / always] demonstrate an understanding of my emotions during adversity and how these emotions affect my leadership performance.	4.89	0.957	0.611	0.533
48	I am [always / never] confident that I can learn something from my adversity to help me be stronger in the future.	5.40	0.973	0.652	0.516
53	I [never / always] take a deliberate, step-by-step approach to overcome adversity.	4.78	1.091	0.625	0.527
54	I [always / never] demonstrate an overall strength of perseverance in my leadership role.	5.15	0.988	0.672	0.635
57	I [don't / [do]] possess the overall strength of understanding current reality in my leadership role.	5.21	1.021	0.708	0.670
58	I [always / never] demonstrate the essential knowledge and skills to lead in tough times.	4.99	0.981	0.638	0.521
63	I [never / always] maintain a confident presence as a leader in the midst of adversity.	5.04	1.146	0.63	0.557
66	I [always / never] demonstrate an overall strength of being value-driven in my leadership role.	5.19	0.968	0.712	0.658
67	I [never / always] seem to acknowledge my mistakes in judgment as a leader.	5.27	0.973	0.674	0.568

Scale Statements from LRP©

Table 18 identifies the five valid questions loading on factor 3, Personal Health and Well-Being. Although few in number, these survey items convey important information about the value an individual places on his or her own health. The key point

is that resilient individuals recognize the need to allocate time for managing their health. Conscious individuals pay attention to all facets of their well-being. This factor explains 4.747% of the sample variance.

Table 18

Factor 3: Personal Health and Well-Being

Item	Statement [Anchors]	Mean	Std. Dev.	Initial	Extracted
35	I [never / always] protect sufficient time and space for renewing the spirit.	4.23	1.385	0.697	0.669
50	I [always / never] create time for replenishing emotional energy.	4.44	1.295	0.633	0.564
59	I [never / always] seem to find healthy ways for channeling my physical energy to relieve stress.	4.54	1.264	0.69	0.729
60	I [never / always] let adverse circumstances that inevitably happen disrupt my long-term focus on maintaining a healthy lifestyle.	4.46	1.279	0.649	0.611
65	I [never / always] monitor my personal health factors, then adjust my behavior accordingly.	4.50	1.268	0.585	0.598

Scale Statements from LRP©

Table 19 shows items loading on the fourth factor, Spiritual Resources. There are three valid statements that explain 3.67% of the sample variance. These three items show a strong connection between spiritual elements and the commitment to leadership. The total explained variance from the combination of the four factors is 66.64%.

Table 19

Factor 4: Spiritual Resources

Item	Statement [Anchors]	Mean	Std. Dev.	Initial	Extracted
22	I [always / never] draw strength from my sense of spirituality in the face of adversity.	4.87	1.476	0.686	0.734
29	During adversity, I [never / always] feel a deep sense of spiritual gratitude for the opportunity to pursue a calling of leadership.	4.43	1.455	0.59	0.526
40	I [possess / don't possess] an overall strength of spiritual well-being in my leadership role.	4.96	1.159	0.725	0.746

Scale Statements from LRP©

Summary

The study sample consisted of 327 LRP© surveys completed from January 2011 through August 2011. One of the original 73 survey statements was deleted due to formatting errors, leaving 72 variables for examination. Demographic data on survey respondents were examined, revealing a sample comprised predominantly of females relatively early in their professional careers.

The 72 variables produced a correlation matrix with sufficient positive correlation to continue with an exploratory factor analysis. The final four-factor solution was achieved with maximum likelihood factor extraction and a promax rotation. Retained factors have eigenvalues greater than one, and cumulatively explain 66.64% of the sample variance. The factors are described and discussed in Chapter 5.

CHAPTER 5

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

This chapter presents the conclusions, implications and recommendations from analysis of sample data collected for this research study, which was conducted to perform a psychometric analysis of the Leader Resilience Profile © (LRP©). The analysis included an exploratory factor analysis to identify the primary constructs subsumed in the LRP© instrument. The research questions established for this study were as follows:

1. What are the psychometric properties of the LRP© instrument?
2. What is the estimated validity and reliability of the LRP© instrument based on the questions and defined strength categories?
3. What are the internal consistency and test-retest reliability estimates of the hypothesized factors of the LRP© instrument?
4. What is the underlying factor structure among the 73 items measuring the constructs of the LRP©?
5. If reliable factors are identified in the LRP©, how might those factors be interpreted?

The study sample was comprised of 327 anonymous responses to the LRP© survey collected over an eight-month period through Patterson's previously established survey website. The study sample was determined to include sufficient variance and correlation to be adequate for reliability testing and exploratory factor analysis.

Reliability and internal consistency of the LRP© instrument were established using a split-half approach, with survey responses randomly selected by the statistical program to establish the halves. Spearman-Brown and Guttman coefficients were

acceptable at 0.732 and 0.711. Cronbach's alpha values for the split halves of the sample were strong at 0.94 and 0.92. These tests provide evidence of the LRP© instrument's reliability and validity.

Exploratory factor analysis using a maximum likelihood factor extraction procedure followed by an oblique promax rotation produced a solution with four valid factors. These four factors encompass 46 of the original 72 instrument statements investigated, and account for almost 67% of the sample variance.

Discussion

A review of the research literature revealed that studies of leadership theories, leader traits and characteristics, and other factors related to leadership abound. The literature is replete with theoretically sound, rigorously conducted research as well as case studies and anecdotal evidence. Despite the volume and rigor of work reported, leadership remains an elusive concept (Bennis & Nanus, 1986; Stogdill, 1974). No consensus has been reached among scholars or leaders in various professions about the definition of leadership or the specific traits and characteristics that successful leaders enjoy, although support has been found for many when examined in various contexts (Judge, et al., 2002; Northouse, 1997; Gill, 2006).

Conversely, the trait of resilience, frequently deemed to be critical for success as a leader, is generally regarded by scholars as relatively definable. Albeit simplistic, resilience is described consistently as the ability to persevere in the presence of adversity (Coutu, 2003; Glantz, 1999; Greene & Conrad, 2002; Neenan, 2009; Patterson, 2005; Siebert, 2008). Regardless of a leader's current level, resilience can be learned or further

developed (Coutu, 2003). And, there is an expanding body of knowledge related to the concept of leader resilience. However, only a modest amount of research on leader resilience has been reported and a comprehensive and reliable instrument to measure this construct has not yet been validated.

The study of leadership resilience brings the two concepts together into a blend informed by self-assessment and considered to be a valuable tool in improving the potential for leader success. It is the position of many of the researchers referenced in this dissertation, that if an individual is able to identify his or her level of leadership resilience, that person may be able to reinforce those areas in which he or she is weak, ultimately strengthening his or her capabilities to contribute to the likely successful outcome of a group or organization.

To that end, a number of survey instruments have been developed and are presently in use by leaders at all levels to assess their respective levels of leadership ability or resilience. The researcher identified 15 such instruments that purport to provide insight into one's ability to successfully manage a group or organization in times of crisis. While each has its merits, none of the instruments identified has been adequately validated to permit a statistically reliable assessment of an individual's leadership resilience.

In light of this recognized gap in tools for leadership self-assessment, this dissertation study examined the Leader Resilience Profile (LRP©) to determine the survey's psychometric properties. Created in 2006, the LRP© was a reaction to the realization by Patterson et al. that while many researchers have studied the concept of resilience, only a limited number have focused on resilience and leadership as a unified

concept. Extensive study in the field of leader resilience led the Patterson team to recognize that the extant instruments designed to measure the construct of leadership resilience were of limited use, often failing to measure the entirety of the concept. Additionally, they found that existing instruments were insufficiently validated (Patterson et al., 2008), leaving a gap in useful tools for fortifying leadership resilience. The LRP© currently in use consists of seventy-three leadership-related questions, organized in 12 subscales (Optimism, Efficacy, Support Base, Perseverance, Adaptability, Emotional Well-Being, Physical Well-Being, Spirituality, Value-Driven, Courageous Decision-Making, Understanding of Reality, and Personal Responsibility (Patterson, et al, 2009)).

Patterson et al. (2009) identified three broad skill sets – thinking, capacity, and action – as required elements of leadership resilience. These constructs are consistent with the four factors extracted from the sample data and validated through exploratory factor analysis. Factor labels emerged through an iterative qualitative process of examining the theoretical and empirical literature compiled during this research study and examining the commonalities among the statements included each factor.

The labels applied to the four factors extracted from the sample data are consistent with the 12 domains defined by Patterson, but no factor is identical in statement content to any domain defined by Patterson, et. al. The constructed labels are as follows: Factor 1 is titled Proactive Self-Leadership; Factor 2 is titled Intrapersonal Intelligence; Factor 3 is titled Personal Health and Well-being; Factor 4 is titled Spiritual Resources.

Factor 1 is titled Proactive Self-Leadership. Of the 46 retained items, 20 items loaded on factor 1. The statements are action-oriented and include a strong learning

orientation. Neck and Manz (2007) describe self-leadership as behavioral and cognitive tactics that an individual uses to direct and motivate his or her own behavior. These tactics can be grouped into three areas: behavior, rewards, and constructive thinking. Self-leadership behaviors evident in the statements include prompt, decisive, appropriate, and principled action; accepting responsibility and accountability, and learning from role models and experiences. Connection with a higher purpose or cause can be rewarding to self-motivated individuals. Examples from the statements that relate to constructive thinking include adjusting expectations, expecting good outcomes, and putting mistakes in perspective.

Factor 2 is titled Intrapersonal Intelligence. Of the 46 retained items, 18 items loaded on factor 2. These survey items show a focus on introspection and self-awareness. This factor includes statements from ten of Patterson's twelve domains. Only the domains of emotional well-being and efficacy are not represented. Gardner (1983) describes intrapersonal intelligence as an individual's ability to look inward, reflecting on how his or her thoughts and feelings direct his or her values and behaviors. Individuals are shaped by their past experiences. Leaders who systematically learn through an inward focus are empowered by their self-awareness to choose approaches and make decisions that are consistent with their values and supported by their skill sets. Self-consistency and values congruence are important as their absence can produce extreme distress.

Factor 3 is titled Personal Health and Well-being. Of the 46 retained items, 5 items loaded on factor 3. Three statements are from Patterson's physical well-being domain, and one statement each comes from emotional well-being and spirituality domains. The evident focus of these statements is that resilient leaders recognize the

effect of personal health status on job performance. Resilient leaders know that physical and emotional health must be nurtured and managed. Therefore, they value healthy lifestyles, reserve time to attend to their health needs, and take corrective action when symptoms of health decline emerge.

Factor 4 is titled Spiritual Resources. Of the 46 retained items, 3 items loaded on factor 4. Although the role of religion in a leader's life is one of the traits associated with "great man" or trait theory (Whittington, 1993), this factor is not about participation in organized religion. Philosophical beliefs serve as a source of personal resilience along with mainstream religions (Patterson, Collins, & Abbott, 2004). Patterson et al. (2009) consider spirituality as an "energy source" (p. 10) that, in combination with physical and emotional health, contributes to a sense of personal efficacy and connects us to others. Scharmer (2009) refers to "spiritual intelligence" as the understanding of "authentic purpose and self" (p. 41). The challenge for leaders is to continually renew this energy source as resources are depleted in times of adversity. As with the personal health factor, resilient leaders should be mindful of the status of their spirituality.

Limitations and Delimitations

All research studies are constrained in multiple ways, with some limits established by the researcher and others inherent in the process. Delimitations are conscious decisions made by the researcher regarding what will, or will not, be included in the design and conduct of the study. Delimitations for this study included a time frame for respondents to complete the survey instrument and the use of an exploratory rather than a confirmatory factor analysis.

Limitations are related to the ways study design and analytical methods can affect results obtained and their subsequent usefulness. Some methods or approaches can introduce bias. Some samples may not be representative of the population. The following limitations to this study are acknowledged:

1. The data were collected using a self-reported survey administered via the Internet. Individual participants may have answered the LRP© survey items in a manner that may have introduced a social desirability bias.
2. Participation in the LRP© survey was voluntary. The data collected by the survey may not represent all leaders, particularly those who did not choose to complete the LRP© survey.
3. Individuals who chose to participate in the LRP© survey may not have represented a truly random sample of leaders.
4. The generalizability of the results cannot go beyond the characteristics of the sample in this study.
5. One variable was excluded from analysis due to a data formatting error. The effect of this omitted variable on the final factor solution cannot be estimated.

Recommendations for Future Research

This study has achieved the stated goal of assessing the validity and reliability of the Leader Resilience Profile© as an instrument to measure an individual's resilience strength in the context of leadership. The instrument was determined to be internally consistent and reliable. However, only 46 of the 72 survey items tested clustered into four valid factors that explained 66% of the variance in the sample. Thus, revising the

survey to reflect the reduced set of items is an appropriate next step. During the revision, all item statements should be reviewed for consistency of phrasing and sentence structure. Expanding the literature review to incorporate additional leadership research in the areas of the identified factors may yield additional items to strengthen the factor structure underlying the instrument. Any items selected for inclusion would need to undergo expert review and validation in a manner similar to that used for the original items. The revised survey could then be subjected to further validation using split-half reliability testing and Cronbach's alpha.

The modified survey should be administered to a new population of participants, using a dissemination approach that will maximize variability in demographic characteristics. Specifically, equitable proportions in gender, distribution of job titles, and years of service are desirable. A sample size of 500 or greater would achieve Tabachnick and Fidell's (2001) rating of "very good" (p. 640). Achieving these sample characteristics should yield a robust data set for further validation analysis and to explore relationships between demographic characteristics and resilience strength as measured by the instrument.

Since exploratory factor analysis on the current data set produced four significant factors that show logical connections to the literature reviewed for this study, a confirmatory factor analysis should be performed on the data collected using the revised instrument. In a confirmatory analysis, the factor structure is hypothesized from a theoretical or conceptual perspective. Results of the statistical analyses performed are then used to support or negate the hypothesized structure. Positive confirmatory results

are of more value in grounding future research than results achieved through exploratory analyses.

Implications for the Leader Resilience Literature

Patterson et al. developed the LRP© after extensive research failed to identify an instrument that provided a comprehensive measure of a leader's resilience. Their goal was to create a statistically reliable instrument that would assess resilience and leadership as a unified concept. Such an instrument would fill an evident gap in leader resilience research. The reliability and validity estimates of the LRP© conducted for this study are important contributions to that goal. Although it is not a parsimonious instrument, the LRP© as conceived by Patterson et al. does exhibit internal consistency and reliability. Individuals who have completed this survey can have confidence that their results are reliable. The LRP© is providing them with information that can help them "recover, learn from, and developmentally mature when confronted by chronic or crisis adversity" (Patterson et al., 2009, p. 2).

Reducing the length of the LRP© from 73 to 46 items will decrease the amount of time required for survey completion, an efficiency gain. Reporting results in four conceptually-related areas rather than twelve domains reduces the complexity of participant feedback, an effectiveness gain. Additionally, these factors should contribute to an increase in survey responses and improved data quality to enhance future validation of the instrument.

The LRP© survey items represent a synthesis of the seminal resilience and leadership literature, primarily in the fields of business, psychology and education. The

instrument was intended to measure the strength of multiple dimensions of resilience in leaders. As a result of this research, the key dimensions of leader resilience and the relative importance of the dimensions are known. This knowledge has utility and implications for scholarship and for leadership.

Summary

The ability of a leader to be proactive, action-oriented, and adaptable is critical during periods of workplace challenge and adversity. Leaders who repeatedly survive and even thrive during difficult times are described as resilient. However, resilience is not an end in itself; it is best considered as a path to developing and renewing a capacity for accomplishment in the face of adverse conditions. This resilience capacity greatly benefits the leader's organization as well as the leader personally. Thus, for a leader to invest in identifying his or her resilience strengths and weaknesses is to invest in the organization's strategy for success. Resilience strength, therefore, has become an important area of personal development for leaders. A valid and reliable instrument for measuring resilience strength and identifying needed development can be an important planning resource. This study has made important first steps in validating the LRP© as such an instrument.

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APPENDIX A

LEADER RESILIENCE PROFILE INSTRUMENT

Leader Resilience Profile

Instructions: For each of the items, fill in the circle above the number that best describes where your leadership behavior fits on the continuum from being like the statement on the left to being like the statement on the right. “1” means your leadership behavior in the face of adversity is strongly reflected by the statement on the left. “6” means your leadership behavior is strongly reflected by the statement on the right. Marking numbers 2, 3, 4, or 5 reflects positions in between.

When confronted with adversity in my leadership role:

Item	Statement	My Leadership Behavior						Statement
1	I always have a positive influence in making things happen.	1	2	3	4	5	6	I never have a positive influence in making things happen.
2	I don't have an overall sense of competence and confidence in my leadership role.	1	2	3	4	5	6	I have an overall sense of competence and confidence in my leadership role.
3	I always use feedback about current reality plus what's possible in the future to make adjustments in my leadership strategies.	1	2	3	4	5	6	I never use feedback about current reality plus what's possible in the future to make adjustments in my leadership strategies.
4	I never manage my time so I can achieve rest and recovery.	1	2	3	4	5	6	I always manage my time so I can achieve rest and recovery.
5	I have a track record of being able to take appropriate action, even when some things about the situation remain ambiguous or confusing.	1	2	3	4	5	6	I have a track record of not being able to take appropriate action, when anything about the situation continues to be ambiguous or confusing.
6	I never accept responsibility for making difficult leadership decisions that may negatively affect some individuals or groups.	1	2	3	4	5	6	I always accept responsibility for making difficult leadership decisions that may negatively affect some individuals or groups.
7	I always try to prevent current adverse circumstances from happening again.	1	2	3	4	5	6	I never try to prevent current adverse circumstances from happening again.

When confronted with adversity in my leadership role:

8	I never reach out to build trusting relationships with those who can provide support in tough times.	1	2	3	4	5	6	I always reach out to build trusting relationships with those who can provide support in tough times.
9	I always adjust my expectations about what is possible based on what I've learned about the current situation.	1	2	3	4	5	6	I never adjust my expectations about what is possible based on what I've learned about the current situation.
10	I don't demonstrate the overall strength of physical well-being needed to effectively carry out my leadership role.	1	2	3	4	5	6	I demonstrate the overall strength of physical well-being needed to effectively carry out my leadership role.

11	I always take prompt, principled action on unexpected threats before they escalate out of control.	1	2	3	4	5	6	When unexpected threats occur, I never take action before the threats escalate out of control.
12	When I choose to take no leadership action in the face of adversity, I never accept personal accountability for this choice.	1	2	3	4	5	6	When I choose to take no leadership action in the face of adversity, I always accept personal accountability for this choice.
13	I always expect that good things can come out of an adverse situation.	1	2	3	4	5	6	I never expect that good things can come out of an adverse situation.
14	When adversity strikes, I never try to learn from the experiences of others who faced similar circumstances.	1	2	3	4	5	6	When adversity strikes, I always try to learn from the experiences of others who faced similar circumstances.

When confronted with adversity in my leadership role:

15	I always demonstrate the ability to put my mistakes in perspective and move beyond them.	1	2	3	4	5	6	I never demonstrate the ability to put my mistakes in perspective and move beyond them.
16	I never draw strength during adversity from my connections to a higher purpose in life or causes greater than myself.	1	2	3	4	5	6	I always draw strength during adversity from my connections to a higher purpose in life or causes greater than myself.
17	I always take prompt, decisive action in emergency situations that demand an immediate response.	1	2	3	4	5	6	I never take prompt, decisive action in emergency situations that demand an immediate response.
18	I always have trouble accepting accountability for the long-term organizational impact of any tough leadership decisions I make.	1	2	3	4	5	6	I always accept accountability for the long-term organizational impact of any tough leadership decisions I make.
19	I always pay attention to external forces that could limit what I would like to accomplish ideally.	1	2	3	4	5	6	I never pay attention to external forces that could limit what I would like to accomplish ideally.
20	I always try to offset any relative weakness I have in an area by turning to others who have strength in this area.	1	2	3	4	5	6	I never try to offset any relative weakness I have in an area by turning to others who have strength in this area.
21	I never demonstrate an overall strength of adaptability in my leadership role.	1	2	3	4	5	6	I always demonstrate an overall strength of adaptability in my leadership role.

When confronted with adversity in my leadership role:

22	I always draw strength from my sense of spirituality in the face of adversity.	1	2	3	4	5	6	I never draw strength from my sense of spirituality in the face of adversity.

23	I never am able to make needed decisions if they run counter to respected advice by others.	1	2	3	4	5	6	I am always able to make needed decisions, even if they run counter to respected advice by others.
24	I demonstrate an overall strength of making courageous decisions in my leadership role.	1	2	3	4	5	6	I don't demonstrate an overall strength of making courageous decisions in my leadership role.
25	I don't have an overall strength of accepting personal responsibility for my leadership actions.	1	2	3	4	5	6	I have an overall strength of accepting personal responsibility for my leadership actions.
26	I always focus my energy on the opportunities to be found in a bad situation, without downplaying the importance of obstacles.	1	2	3	4	5	6	I always focus my energy on the obstacles, not the opportunities, found in a bad situation.
27	I never have a strong support base to help me through tough times in my leadership role.	1	2	3	4	5	6	I always have a strong support base to help me through tough times in my leadership role.
28	I can always emotionally accept those aspects of adversity that I can't influence in a positive way.	1	2	3	4	5	6	I can never seem to emotionally accept those aspects of adversity that I can't influence in a positive way.

When confronted with adversity in my leadership role:

29	During adversity, I never feel a deep sense of spiritual gratitude for the opportunity to pursue a calling of leadership.	1	2	3	4	5	6	During adversity, I always feel a deep sense of spiritual gratitude for the opportunity to pursue a calling of leadership.
30	I always make value-driven decisions even in the face of strong opposing forces.	1	2	3	4	5	6	I never make value-driven decisions even in the face of strong opposing forces.
31	I never gather the necessary information from reliable sources about what is really happening relative to the adversity.	1	2	3	4	5	6	I always gather the necessary information from reliable sources about what is really happening relative to the adversity.
32	I always maintain a respectful sense of humor in the face of adverse circumstances.	1	2	3	4	5	6	I am never able to maintain a sense of humor in the face of adverse circumstances.
33	I always let adversity in one aspect of my life have a long-term impact on the resilience in other parts of my life.	1	2	3	4	5	6	I never let adversity in one aspect of my life have a long-term impact on the resilience in other parts of my life.
34	When adversity strikes, I always avoid taking action until I've sufficiently gained control of my emotions.	1	2	3	4	5	6	When adversity strikes, I always take action before I've sufficiently gained control of my emotions.
35	I never protect sufficient time and space for renewing the spirit.	1	2	3	4	5	6	I always protect sufficient time and space for renewing the spirit.

When confronted with adversity in my leadership role:

36	I always demonstrate the overall strength of being a resilient leader.	1	2	3	4	5	6	I never demonstrate the overall strength of being a resilient leader.
37	I never demonstrate an overall strength of optimism in my leadership role.	1	2	3	4	5	6	I always demonstrate an overall strength of optimism in my leadership role.
38	I persistently refuse to give up in overcoming adversity, unless it's absolutely clear all realistic strategies have been exhausted.	1	2	3	4	5	6	I stubbornly refuse to give up in overcoming adversity, even when it's absolutely clear all realistic strategies have been exhausted.
39	I never emotionally let go of a goal that I commit to, even at the expense of sacrificing goals and values that are more important to me.	1	2	3	4	5	6	I always emotionally let go of a goal that I am pursuing, if it's causing me to sacrifice goals and values that are more important to me.
40	I possess an overall strength of spiritual well-being in my leadership role.	1	2	3	4	5	6	I don't possess the overall strength of spiritual well-being in my leadership role.
41	I never seem to look for the positive aspects of adversity to balance the negative aspects.	1	2	3	4	5	6	I always try to find the positive aspects of adversity to balance the negative aspects.
42	I always seek perspectives that differ significantly from mine, when I need to make tough decisions.	1	2	3	4	5	6	I never seek perspectives that differ significantly from mine, when I need to make tough decisions.

When confronted with adversity in my leadership role:

43	I never try to find new or creative strategies to achieve positive results in a difficult situation.	1	2	3	4	5	6	I always search for various new or creative strategies to achieve positive results in a difficult situation.
44	During adversity, I always sustain a steady, concentrated focus on the most important priorities until I achieve successful results.	1	2	3	4	5	6	During adversity, I never sustain until success is reached a steady, concentrated focus on the most important priorities.
45	I never demonstrate an understanding of my emotions during adversity and how these emotions affect my leadership performance.	1	2	3	4	5	6	I always demonstrate an understanding of my emotions during adversity and how these emotions affect my leadership performance.
46	I always rely on strongly-held moral or ethical principles to guide me through adversity.	1	2	3	4	5	6	I never turn to moral or ethical principles to guide me through adversity.
47	I never seem to accept the reality that adversity is both inevitable and many times occurs unexpectedly.	1	2	3	4	5	6	I always accept the reality that adversity is both inevitable and many times occurs unexpectedly.
48	I am always confident that I can learn something from my adversity to help me be stronger in the future.	1	2	3	4	5	6	I am never confident that I can learn something from my adversity to help me be stronger in the future.

49	I always let disruptive forces and other distractions interfere with my focus on important goals and tasks.	1	2	3	4	5	6	I never let disruptive forces and other distractions interfere with my focus on important goals and tasks.

When confronted with adversity in my leadership role:

50	I always create time for replenishing emotional energy.	1	2	3	4	5	6	I never create time for replenishing emotional energy.
51	I never seem to be able to privately clarify or publicly articulate my core values.	1	2	3	4	5	6	I am always able to privately clarify or publicly articulate my core values.
52	I always accept the reality that adversity can disrupt my best-laid plans or current projects.	1	2	3	4	5	6	I never accept the reality that adversity can disrupt my best-laid plans or current projects.
53	I never take a deliberate, step-by-step approach to overcome adversity.	1	2	3	4	5	6	I always take a deliberate, step-by-step approach to overcome adversity.
54	I always demonstrate an overall strength of perseverance in my leadership role.	1	2	3	4	5	6	I never demonstrate an overall strength of perseverance in my leadership role.
55	I never have the overall strength of emotional well-being in my leadership role.	1	2	3	4	5	6	I always have the overall strength of emotional well-being in my leadership role.
56	I always take leadership actions consistent with what matters most among competing values.	1	2	3	4	5	6	I never base my leadership actions on what matters most among competing values.

When confronted with adversity in my leadership role:

57	I don't possess the overall strength of understanding current reality in my leadership role.	1	2	3	4	5	6	I am proud of demonstrating an overall strength of understanding current reality in my leadership role.
58	I always demonstrate the essential knowledge and skills to lead in tough times.	1	2	3	4	5	6	I never demonstrate the essential knowledge and skills to lead in tough times.
59	I never seem to find healthy ways for channeling my physical energy to relieve stress.	1	2	3	4	5	6	I always find healthy ways for channeling my physical energy to relieve stress.
60	I never let adverse circumstances that inevitably happen disrupt my long-term focus on maintaining a healthy lifestyle.	1	2	3	4	5	6	I always let adverse circumstances that inevitably happen disrupt my long-term focus on maintaining a healthy lifestyle.
61	I never seek feedback to see if my leadership actions are matching my values.	1	2	3	4	5	6	I always seek feedback to see if my leadership actions are matching my values.
62	I always accept responsibility for making needed changes personally in those cases where I contributed to the adversity.	1	2	3	4	5	6	I never seem to accept responsibility for making needed changes personally in those cases where I contributed to the adversity.

63	I never maintain a confident presence as a leader in the midst of adversity.	1	2	3	4	5	6	I always maintain a confident presence as a leader in the midst of adversity.

When confronted with adversity in my leadership role:

64	I always quickly change course, as needed, to adapt to rapidly changing circumstances.	1	2	3	4	5	6	I never quickly change course, as needed, to adapt to rapidly changing circumstances.
65	I never monitor my personal health factors, then adjust my behavior accordingly.	1	2	3	4	5	6	I always monitor my personal health factors, then adjust my behavior accordingly.
66	I always demonstrate an overall strength of being value-driven in my leadership role.	1	2	3	4	5	6	I never demonstrate an overall strength of being value-driven in my leadership role.
67	I never seem to acknowledge my mistakes in judgment as a leader.	1	2	3	4	5	6	When I make mistakes in judgment as a leader, I publicly accept responsibility to avoid making these mistakes in the future.
68	I never hesitate to tell those I trust about my doubts or fears related to adversity.	1	2	3	4	5	6	I never tell those I trust about any of my doubts or fears related to adversity.
69	I am always determined to be more persevering than before when confronted with the next round of adversity.	1	2	3	4	5	6	I never seem determined to be more persevering than before when confronted with the next round of adversity.
70	I never try to learn from role models who have a strong track record of demonstrating resilience.	1	2	3	4	5	6	I always actively seek to learn from role models who have a strong track record of demonstrating resilience.

When confronted with adversity in my leadership role:

71	I always seek the most current, research-based information about how to sustain healthy living in stressful times.	1	2	3	4	5	6	I never seek the most current, research-based information about how to sustain healthy living in stressful times.
72	I never turn to personal reflection or introspection to steady myself during adversity.	1	2	3	4	5	6	I always turn to personal reflection or introspection to steady myself during adversity.
73	I am always comfortable sharing with my support base any small wins I achieve along the road to recovering from adversity.	1	2	3	4	5	6	I am never comfortable sharing with my support base any small wins I achieve along the road to recovering from adversity.

(Patterson, et al., p 14-20, 2009)

APPENDIX B

LRP© RESULTS OUTPUT

Leader Resilience Profile®

Thank you again for assisting us in the development of the LRP. The survey is comprised of twelve Resilience Strengths. Below is a summary of your strength score for each category, including your score placement on the continuum from Low Resilience Strength Score to Very High Resilience Strength Score.

Your Resilience Strength Scores

Strength	*Score*	*Resilience Strength Score Continuum*
Understanding Reality:	34	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Envisioning the Future:	31	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Personal Values:	33	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Personal Efficacy:	33	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Personal Support Base:	32	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Emotional Well-Being:	29	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Spiritual Well-Being:	18	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Physical Well-Being:	27	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Perseverance:	31	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Adaptability	35	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Courageous Decision-Making:	33	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*
Personal Responsibility:	34	6 7 8 9 10 11 *Low* | 12 13 14 15 16 17 *Moderately Low* | 18 19 20 21 22 23 *Moderate* | 24 25 26 27 28 29 *Moderately High* | 30 31 32 33 34 35 36 *Very High*

APPENDIX C

IRB APPROVAL FORM

UAB THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Institutional Review Board for Human Use

Form 4: IRB Approval Form
Identification and Certification of Research
Projects Involving Human Subjects

UAB's Institutional Review Boards for Human Use (IRBs) have an approved Federalwide Assurance with the Office for Human Research Protections (OHRP). The Assurance number is FWA00005960 and it expires on September 29, 2013. The UAB IRBs are also in compliance with 21 CFR Parts 50 and 56.

Principal Investigator: PAUSTIAN, PAMELA E

Co-Investigator(s):

Protocol Number: **E101217019**

Protocol Title: *A Psychometric Analysis of the Leader Resilience Profile©*

The above project was reviewed on 12/30/10. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services. This project qualifies as an exemption as defined in 45CF46.101, paragraph 2.

This project received EXEMPT review.

IRB Approval Date: 12/30/10

Date IRB Approval Issued: 12/30/10

Sheila Moore, CIP

Sheila Moore, CIP
Director, Office of the Institutional
Review Board for Human Use (IRB)

Investigators please note:

IRB approval is given for one year unless otherwise noted. For projects subject to annual review research activities may not continue past the one year anniversary of the IRB approval date.

Any modifications in the study methodology, protocol and/or consent form must be submitted for review and approval to the IRB prior to implementation.

Adverse Events and/or unanticipated risks to subjects or others at UAB or other participating institutions must be reported promptly to the IRB.

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APPENDIX D

CORRESPONDENCE FOR RECRUITING PARTICIPANTS

Correspondence for Recruiting Participants

UAB IRB Protocol #: E101217019

Dear Potential Research Participant,

I am a doctoral student conducting a research study titled "A Psychometric Analysis of the Leader Resilience Profile." The purpose of this research study is to assess the validity and reliability of the Leadership Resilience Profile (LRP©), a quantitative survey instrument designed to measure your personal strength in multiple dimensions of resilience typically evident in leaders. The Leadership Resilience Profile survey will take approximately 30 minutes to complete using a computer keyboard and mouse. After you finish the LRP©, your results will be shown indicating your areas of strength and weakness related to these resilience dimensions. You can print this report, but when you exit the survey your report cannot be accessed again because there is no personal identifier connected to your data.

The data gathered during this research will be used to analyze the individual LRP© instrument items and the instrument as a whole for internal consistency, convergent and discriminate validity, and reliability, using exploratory factor analysis and descriptive statistics. Findings from this study will aid in determining the future value of the instrument as a research tool and as a diagnostic tool to identify professional development needs for individuals in leadership positions.

Participation in this research study is voluntary and you may exit the survey at any time by closing your browser window. You will be asked to enter your age, gender,

and job title, but no personal identifier will be attached to your response. The survey is completely anonymous and your identity cannot be determined.

If you have questions about your rights as a research participant, or concerns or complaints about the research, you may contact Ms. Sheila Moore. Ms. Moore is the Director of the Office of the Institutional Review Board for Human Use (OIRB) at the University of Alabama at Birmingham (UAB). Ms. Moore may be reached at (205) 934-3789 or 1-800-822-8816. If calling the toll free number, press the option for "all other calls" or for an operator/attendant and ask for extension 4-3789. Regular hours for the Office of the IRB are 8:00 a.m. to 5:00 p.m. CT, Monday through Friday. You may also call this number in the event the research staff cannot be reached or you wish to talk to someone else.

By accessing the link below you authorize use of the information gathered for the stated research purpose, although it will not be identifiable to you and individual responses will not be reported.

The Leadership Resilience Profile survey may be accessed at:

http://www.theresilientleader.com/

If you have questions about this research study I may be reached at paustian@uab.edu or (205) 790-5616. I appreciate your contribution to my doctoral research.

Pam Paustian
Principal Investigator

APPENDIX E

LRP© CORRELATION MATRIX