Graduate Theses and Dissertations   Graduate School

10-17-2016

Leader Behavior Portfolios

Matthew Stephen Arbogast
University of South Florida, marbogast@mail.usf.edu

Scholar Commons Citation

Leader Behavior Portfolios

by

Matthew S. Arbogast

A thesis submitted in partial fulfillment
of the requirements of the degree of
Doctor of Philosophy
Department of Psychology
College of Arts and Sciences
University of South Florida

Major Professor: Michael D. Coovert, Ph.D.
Walter C. Borman, Ph.D.
Joseph A. Vandello, Ph.D.

Date of Approval:
September 15, 2016

Table of Contents

List of Tables

List of Figures

Abstract

Existing leadership theories and applied resources contain bountiful lists of recommended behaviors for leaders to employ, yet an integrated model that produces the most efficient set of leader behaviors does not currently exist. A standard, quantitative method to compare and contrast leader behaviors is needed to siphon utility from each resource, leading to an integrated and diversified set of optimal behaviors for leaders to consider. Leaders have limited time and need a reliable method to make informed behavioral decisions that consistently produce the most positive effects on the desired outcome. Unfortunately, leaders do not have the time to sift through the plethora of literary resources to uncover an optimal list of behavioral options. Leaders need to know what behavior to employ, when to employ it, the expected outcome, and the potential risk. Interestingly, these behavioral variables are also common to investors in the financial arena, where the principles of Modern Portfolio Theory (MPT) are often used to decipher the most optimal portfolio from a daunting list of investment options. The primary purpose of this study was to adopt some of the basic principles behind MPT in order to propose a similar quantitative Leader Behavior Portfolio Model, which determines an integrated and optimal set of effective leader behaviors. During this research, the proposed model was populated with archival performance data on over 5,000 cadets at the United States Military Academy. The outputs were then used to construct and administer surveys to 255 ROTC cadets in order to validate the model. The results of the survey response data were consistent with the outputs from the Leader Behavior Portfolio Model, showing strong support for adopting the principles of MPT to create an optimal set of leader behaviors.

Introduction

The art of leadership is a complex endeavor that is continuously scrutinized and evaluated to uncover the best, or most effective, leader behaviors. In 1956, President Eisenhower correctly asserted that "*leadership is a word and a concept that has been more argued than almost any other I know"* (Dwight D. Eisenhower Presidential Library, 1956). A big part of this ongoing struggle is the desire to identify optimal leader behaviors. Both novice and experienced leaders often search for the most effective behaviors to achieve a specified outcome. However, the vast range of resources related to this topic is overwhelming, especially for leader-practitioners. A leader that seeks mastery in the art of leadership has a suite of references to choose from including: anecdotal evidence from trusted mentors; experienced-based leadership books; leader development programs; and, of course, empirical research studies. However, most leaders do not have the time to sift through this over-abundant list of resources, and if they did, it could even lead to more questions than answers. The theoretical overview in this document helps portray the crux of this problem, as many of the popular leadership theories contain a series of behavioral recommendations that leaders can consider. The leadership discipline needs a standard, quantitative process to siphon utility from each resource and theory, leading to an integrated and diversified set of optimal leader behaviors.

Although many practical leadership theories have evolved over time, their individual contributions and utility in the leadership field remain in silos. An integrated model that calculates the most optimal set of leader behaviors does not currently exist. However, a similar model is widely used in the financial arena to determine an optimal set of investments. This

financial model, developed from Modern Portfolio Theory (MPT), supports the importance of diversification and shares many of the same broad variables that are needed to build a quantitative leader portfolio model. Therefore, adopting the framework of MPT may prove great utility in determining optimal leader behaviors. The aim of this study was to 1) propose a quantitative model for building an optimal set of effective leader behaviors; 2) describe functionality of the model in terms of leader training and development; and 3) test both validity and reliability of the model.

Theoretical Overview

Many of the resources available to the leader-practitioner allude to some well-known leadership theories ranging from the early Great Man theory to the more recent transactional and transformational theories. In addition to these theories, a leader can also get bogged down investigating and integrating ideal behaviors associated with the following: The Power Approach by French and Raven (1959); Behavioral Approach (Fleishman, Harris, & Burtt, 1955); Contingency Theory, introduced by Fiedler (1967); Adair's Action-Centred Leadership Model (1973); Leader-Member Exchange by Dansereau, Graen, and Haga (1975); and the Full-Range Theory of Leadership by Avolio and Bass (1997). Each of these stove-piped theories has its own subset of styles, behaviors, and insights that create an over-abundance of leader references. This literature review highlights the evolution of these leadership theories; summarizes the challenges leaders face; and describes the commonality between MPT and selecting optimal behaviors.

The Traditional, Trait Based Approach. The Great Man theory includes the idea that individuals are born with superior qualities and persevere through extraordinary circumstances to emerge as great leaders (Bass B. M., 1990). This trait-based idea was primarily developed through a post hoc process of analyzing well-known leaders to identify potential

sources of their "greatness." This traditional approach proposed two antecedents for great leaders: highly admirable traits and an extraordinary life experience (Landy & Conte, 2013). The first idea, that leaders are born with traits and attributes making them destined for great leadership (Rajan, 2009), seems appealing in terms of selecting great leaders, as one could screen candidates based on inherent characteristics. However, reliability of this practice is questioned and it does not account for follower interactions and varying situational dynamics (Rajan, 2009). Although new interests in trait-based perspectives have recently re-emerged (Zaccaro, 2007), research on the Great Man and trait based approaches have diminished since they do not propose any effective leader behaviors or styles with practical utility in terms of training leaders.

   Power Considerations. One popular theory that does warrant consideration for leader training and development is the Power Approach proposed by French & Raven (1959). The Power Approach suggests five power types (Reward, Legitimate, Coercive, Referent, and Expert) that leaders can leverage to influence followers (French & Raven, 1959). Reward power exists when the leader has an actual, or perceived, ability to offer and bestow rewards. Legitimate power is a true, or designated, authorization to exert influence over subordinates and the reciprocal obligation for followers to adhere. Coercive power is similar to reward power except the power is obtained through the ability to punish, rather than reward followers. Leaders hold referent power when subordinates identify with the leader and wish to emulate. The final type of power brought to light by French and Raven is expert power, which is when an individual gains influence over others through a special skill or area of expertise. Buried within these five power types are 29 different suggestions for using power effectively and 35 actions (Table 1) that one can employ to increase or maintain power (Yukl, 2006). These suggested behaviors can help leaders craft an approach for developing and implementing power. However, before

crafting deliberate strategies to employ the right set of actions, leaders must first understand their

power position and determine whether to increase or maintain their desired power advantage.

Table 1

Power Behaviors by Type and Purpose (Yukl, 2006 and Landy & Conte, 2013)

TYPE	PURPOSE	
	Gaining Power *(35 Actions)*	**Using Power** *(29 Actions)*
Legitimate	-Clearly gain formal authority -Establish and use symbols of authority -Gain acknowledgement of your authority -Exercise your authority -Communicate orders through proper methods -Back authority with rewards & punishment	-Politely make clear requests -Explain the rationale for a request -Stay within your scope of authority -Verify authority if necessary -Stay sensitive to special concerns -Check expectations; verify compliance -Demand compliance when necessary
Reward	-Discover follower needs -Control the reward system -Promulgate your controlled rewards -Promise and provide only feasible rewards -Ensure rewards are used appropriately -Keep reward system and incentives simple -Ensure rewards are not used for personal gain	-Create and offer appealing rewards -Ensure rewards are ethical -Explain reward criteria -Properly distribute promised rewards -Use rewards to reinforce behaviors
Expert	-Gain superior and relevant knowledge -Maintain technical awareness and proficiency -Control access to information sources -Ensure expertise is presented symbolically -Solve difficult challenges/display competence -Make careful assumptions; know the facts -Present facts clearly and truthfully -Maintain consistent positions	-Clearly articulate your rational -Explain the importance of a proposal -Provide evidence of success -Listen seriously to special concerns -Avoid arrogance and show respect -Remain confident and act decisive
Referent	-Positively appreciate and accept others -Support and help others -Treat others fairly; avoid manipulation -Defend and back others as appropriate -Follow-through on promises and agreements -Selflessly show concern -Use sincere ingratiation	-Appeal personally to followers -Indicate the importance of your request -Ensure the relationship is commensurate to the favors requested -Role model proper behaviors
Coercive	-Create penalties for undesirable behavior -Employ punishments -Avoid hasty and reckless threats -Avoid manipulative coercion -Employ legitimate punishments appropriately -Ensure proportionate punishments -Avoid using coercion for personal gain	-Promulgate rules and punishments -Provide sufficient warnings -Know the situation before punishing -Stay calm/constructive; avoid hostile acts -Focus on gains to help avoid punishment -Seek feedback for methods to improve -Employ disciplinary measures in private

The Behavior Based Approach. Since the 1960s, theories have evolved from the idea that "leaders are born" to more behavioral based theories (Bolden, Gosling, Marturano, & Dennison, 2003). The Ohio State Leadership Studies, which produced leader behavior scales and other significant contributions, altered the focus of leadership research and emphasized the importance of actions versus traits. The Ohio State studies emphasized two behavioral dimensions: structure and consideration (Schriesheim & Bird, 1979). Initiating structure is a more rigid domain and consists of behaviors that organize processes, declare role definitions and expectations, and build mechanisms to achieve goals. The consideration dimension includes behaviors related to trust, rapport, and concern for the individual and group. A leader high on consideration would likely promote open communication and seek decision making input from subordinates (Landy & Conte, 2013). The Ohio State studies pushed research a level beyond trait identification, and the subsequent shift to behavioral based research opened the door for identifying and suggesting effective leader behaviors. Research in the behavioral domain can add value to effective leader training and development. Leaders can learn how to employ behaviors that initiate structure, build consideration, and achieve a range of performance goals.

In 1964, Robert Blake and Jane Mouton proposed a managerial grid model that charts five basic leadership styles that are determined through the amount of concern a leader exhibits for both production and people (Blake & Mouton, 1964). This model is related to the behavioral approach, as *concern for production* relates to initiating structure and *concern for people* is closely aligned with consideration. The model suggests that a team management leadership style is best, since it is high on concern for both people and production. However, this model does not incorporate the potential impact of situational variables. Leader behaviors are not universal; effectiveness varies with context. Although the behavioral approach was a great step in the

evolution of leadership theory, it did not account for situational variability that was later introduced by Fred Fiedler in 1965. Therefore, before crafting an approach to leader development and leveraging the managerial grid as a tool, one must first understand the environmental framework.

Contingency and Situational Approach. Contingency theory is built on the premise of situational dynamics and how it can shape the effectiveness of leader behaviors. The core principle behind Fiedler's (1965) contingency theory is that group performance is determined through the interaction of the leader's behaviors and the situation (Pires da Cruz, Nunes, & Pinheiro, 2011). In other words, there is no single leadership approach that is effective for all situations and a leader must match the right leadership style with, what Fiedler called, "situational favorableness." Fiedler proposed three situational variables that determine effectiveness in relation to the employed leader style: the degree of respect and trust followers have for the leader; the amount of task structure for the job; and the leader's degree of authority or position power (Fiedler, 1965).

Stemming from Fiedler's theory was the Hersey Blanchard model (Landy & Conte, 2013), which suggests that subordinates, also referred to as followers, play a central role in determining appropriate leader behaviors. In this model, psychological maturity and job maturity of subordinates are situational variables and help determine how much task oriented and relationship oriented behaviors a leader should employ (Hambleton & Gumpert, 1982). Once the maturity level is discovered, the leader can then employ elements of the following four proposed leadership styles: Direction, Coaching, Supporting, and Delegating (Bolden et al., 2003). Table 2 depicts the employment triggers and sample behaviors associated with each style.

Table 2

Hersey Blanchard Model Behaviors (Bolden et al., 2003 and Hambleton & Gumpert, 1982)

Leadership Style	When to Employ *(Follower Job & Psychological Maturity)*	Behavior Subsets
Direction	When followers have low readiness levels, that are neither willing nor able to take responsibility	-Provide clear instructions -Provide specific direction -Supervise closely
Coaching	When followers have moderate readiness levels, that are either willing to take responsibility or competent	-Encourage two-way comm. -Build confidence -Motivate subordinates -Retain decision-making control
Supporting	When followers have moderate readiness levels, that are either willing to take responsibility or competent	-Support subordinate decisions -Provide less direction -Involve follower in decisions -Listen to subordinates
Delegating	When followers have high readiness levels that are competent & motivated to take responsibility	-Share responsibility -Share authority

Another model that accounts for situational variables is John Adair's Action-Centered Leadership Model. This model advocates that a leader must tailor his actions among three groups of interrelated activities (Rajan, 2009): task achievement (creating task structure), team building (coordinating work among the team), and individual development (support individuals during execution). These three components have a subset of 18 total behaviors (Table 3) that are tailored and weighted based on situational requirements (Adair, 1973). The problem associated with this model is that the leader constantly faces the dilemma of assessing the situational demands in order to prioritize and emphasize among the three groups of activities. The notable commonality among the Adair model and the previous contingency theories is that none offer a "silver bullet" solution for leaders. There is no prescriptive model that fits all potential scenarios (Rajan, 2009). These theories also don't explain how relations between leaders and followers will influence behaviors. The dynamics of leader-subordinate relationships will undoubtedly

shape actions, especially those related to team building and individual development. This leads

to Leader-Member Exchange, a theory grounded in the relationship domain.

Table 3

Action Centered Leadership Model Behaviors (Bolden et al., 2003 and Adair, 1973)

Interrelated Activities	Purpose	Behavior Subsets *(18 Actions)*
Task Achievement	Create task structure	-Clearly define the task -Make an initial plan -Allocate resources and tasks -Control workflow -Monitor performance -Adjust the plan as necessary
Team Building	Coordinate work among the team	-Build the team -Maintain discipline -Instill a sense of purpose for the group -Encourage & motivate others -Appoint lower-level leaders -Ensure team communication -Develop teams
Individual Development	Support individuals during execution	-Address individuals' problems -Praise followers when appropriate -Check progress and provide status -Recognize and leverage individual abilities -Develop followers

Leader Member Exchange (LMX). Three domains of leadership exist: the leader,

the follower, and the relationship (Graen & Uhl-Bien, 1995). LMX theory centers on the

relationship domain and suggests that leaders adjust behaviors between subordinates based on

the quality and duration of subordinate relations (Dansereau, Graen, & Haga, 1975). These

different exchange relationships impact the quality of leader-subordinate relations and impact

important outcomes (Avolio, Walumbwa, & Weber, 2009). Subordinates that enjoy greater

quality relationships with a leader can become, what is known as, an in-group member. In-group

relationships, characterized by a high degree of mutual trust, respect, and obligation (Graen &

Uhl-Bien, 1995), typically produce more desirable work attitudes, higher performance levels, and more organizational citizenship behaviors (Avolio et al., 2009). Those with lower quality relationships with the leader become members of the out-group and are more likely to interact with leaders through more formal power barriers and authority (Landy & Conte, 2013). LMX has evolved beyond the categorical analysis of in-groups and out-groups and now attempts to uncover effective leadership processes that help the leader develop a dyadic partnership with each and every subordinate (Graen & Uhl-Bien, 1995). The suggestion that leaders must offer all subordinates the opportunity to partner is obviously problematic for large organizations, as leaders will never have the time to build close partnerships with every subordinate. Even leaders that do have fewer subordinates still need a method to decide which behaviors will increase the overall quantity of high-quality relationships; and research producing correlations between effective leader behaviors and LMX are scarce. Although some research on effectiveness exists, most assess impact of behaviors associated with transformational leadership. O'Donnell, Taber, and Yukl (2009) summarized these findings and assessed impact on LMX with a more comprehensive set of behaviors. Their findings revealed that the following five leader behaviors were antecedents of LMX: supporting, recognizing, consulting, delegating and leading by example (O'Donnell, Taber, & Yukl, 2009). Thus, at least for now, a leader desiring to partner with subordinates and build better quality relationships can reference these five effective leader behaviors that are supported with empirical evidence.

New Leadership Theories. The most recent theories are transformational and transactional leadership (Burns, 1978). Transformational leadership alone has four primary components: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration and can be briefly described as a motivational leadership method

that empowers followers to achieve a higher performance than normally anticipated (Bass & Riggio, 2008). Furthermore, transformational leaders are proactive and actually attempt to shape the environment instead of merely reacting to circumstance (Avolio & Bass, 1988). This type of leadership has five transformational styles and a subset of 29 associated behaviors (Avolio & Bass, 1994) illustrated in Table 4.

Table 4

Transformational Leadership Styles & Behaviors (Avolio & Bass, 1994)

Styles	Style Descriptions	29 Typical Behaviors
Idealized Influence	Living one's ideals; displaying conviction; and emphasizing the importance of trust, commitment, and purpose	-Talk about values and beliefs -Stress a strong sense of purpose -Consider ethical consequences of decisions -Champion new possibilities -Emphasize the importance of trust
Inspirational Motivation	Articulating a future vision and inspiring others	-Emphasize optimism for the future -Embrace requirements enthusiastically -Articulate a future vision -Express confidence in goal achievement -Generate excitement for goals -Take a solid position on important issues
Intellectual Stimulation	Stimulating and challenging individuals; encouraging subordinates to rationalize and express ideas	-Re-examine critical assumptions -Seek alternate perspectives of problems -Get others to look at problems differently -Suggest new ways of complete assignments -Encourage out-of-the-box thinking -Revisit and rethink legacy ideas
Individualized Consideration	Dealing with individuals and mentoring subordinates	-Teach and coach individuals -Treat others as individuals vs group members -Consider individual needs, abilities, & ambitions -Develop others -Listen attentively to concerns -Promote the self-development of others
Idealized Attributes	Showing respect, trust and faith	-Instill pride -Suppress self-interests for the collective good -Act in ways that gain respect -Demonstrate power and competence -Make personal sacrifices for others -Reassure others that goals will be achieved

Subsequent research further refined the theory into seven broad competencies that help increase follower support (Hooper & Potter, 1997). These competencies, highlighted by Hooper and Potter, include direction setting, example setting, communication, alignment, bringing out the best, acting as a change agent, and crisis decision making. Consequently, if leaders want to broaden their behavioral repertoire to generate more transformational outcomes, then they must sift through the dynamics of four components, five basic styles, 29 associated behaviors, and seven broad competencies.

Even if the leader-practitioner manages to fully absorb all the facets of the transformational style, some research has indicated that it is not the most effective for all organizations. In particular, transformational behaviors are less effective in public organizations that typically possess well-defined structure, rules, and procedures (Lowe, Kroeck, & Sivasubramaniam, 1996). Due to this distinction, Lowe et al. hypothesized that transactional leader behaviors would appear more frequently, and be more effective, in public organizations. Hence, it is also important to carefully consider the characteristics of transactional leadership.

Transactional leadership can be described as the practice of maintaining order through the distribution of rewards and punishments (Biscontini, 2015). Leaders that implement the transactional style will convince followers to obtain goals by adopting specified behaviors; this normally includes social contracts that, once fulfilled, result in rewards (Landy & Conte, 2013). The transactional style has two leader behavior categories: contingent reward and management by exception (Jansen, Vera, & Crossan, 2009). However, these are broad categories that include a subset of behaviors that include establishing goals, setting expectations, creating standards, providing rewards, distributing punishment, and monitoring daily affairs (Jansen et al., 2009). In 1992, Stephen Covey differentiated between transformational and

transactional leadership by describing transactional leadership as behaviors that serve to leverage subordinate needs to achieve goals; focus on short term tactics; maximize efficiency with current systems; and reinforce the bottom line (Bolden et al., 2003). Thus, as with the transformational approach, transactional leadership has an amalgamation of behaviors that, depending on the scenario, may or may not be effective for leaders. Some researchers have also posited that these two styles are complementary, and that the transformational style may actually prove ineffective if there is no employment of transactional behaviors (Bass, Avolio, & Goodheim, 1987). This suggests optimal performance includes an integration of leadership styles and behaviors. This leads to a broader question: What other leadership styles and behaviors should be integrated?

A step toward the integration approach is the Full-Range Theory of Leadership introduced by Avolio and Bass (1997). In this approach, nine single-order factors are suggested as part of a hierarchy of effective leadership (Antonakis, Avolio, & Sivasubramaniam, 2003). These single-order factors are broken out from first order factors that are components of transformational, transactional, and laissez-faire leadership styles. Antonakis et al. (2003) noted that Laissez-faire leadership is not the absence of leadership, but the process of actively choosing to avoid decisions, turning down responsibility, and not using authority. The nine single-order factors described in the full-range theory are integrated from three different leader styles and include: idealized influence (attributes), idealized influence (behaviors), inspirational motivation, intellectual stimulation, individualized consideration, contingent reward leadership, active management-by-exception, passive management-by-exception, and laissez-faire leadership. Despite linking the two newest leadership styles, and the less ideal laissez-faire style, the full-range theory does not provide a method for identifying the best leader behaviors. A mechanism

that produces a hybrid style, with an optimal set of integrated behaviors, can lead to new and better strategies for both training and developing leaders.

The Leader's Challenge

So where do leaders start? Realistically…they don't. Diving deep into literary resources to find and integrate a set of effective leader behaviors takes significant time, a critical resource for leaders. Leaders and managers work at relentless paces and are more concerned with taking action and achieving results, rather than engaging in deep reflection (Mintzberg, Kotter, Zaleznik, Badaracco, & Farkas, 1998). It is simply unrealistic to assume any current leader-practitioner is investing time to master his trade through careful analysis of leadership theories and their associated research documents. In order to solve this challenge, leadership theory must break away from the single behavioral perspective (Derue, Nahrgang, Wellman, & Humphrey, 2011) and drive towards integration (Avolio B. , 2007). Derue et al. succinctly summarized the integration shortfall in 2011:

> *Research within the leader behavior paradigm often focuses on a single behavioral perspective. For example, Judge and Piccolo (2004) meta-analyzed the literature on transformational and transactional leadership, and Judge, Piccolo, and Ilies (2004) did the same for initiating structure and consideration. Neither of these studies integrated across leader behaviors or considered whether the effects were independent. Yet, initiating structure and transactional leadership both focus on task-oriented leader behaviors, whereas consideration and transformational leadership both comprised relational-oriented leader behaviors (Bass & Bass, 2008; Fleishman, 1953) (p. 8-9).*

There is no single leadership style that truly fits all circumstances (Bolden et al., 2003). It is not enough to know which leader behaviors to integrate; employment must fit the contextual

environment. In summation, leaders face an information challenge. They contemplate wh*at* to do in various situations; *when* to do it; the potential *risk* involved; and the expected *outcome* of their behavior. A model that calculates optimal leader behaviors can meet these needs and is long overdue.

Modern Portfolio Theory

A similar information dilemma plagues the financial world, as investors typically seek the exact same information as leaders: *what*, *when*, *outcome* (or potential returns), and *risk*. Another similarity with the leaders' challenge is that investors have a plethora of investment options to consider. Consequently, a similar question is proposed: Where do investors start? Well…they already have.

In 1952, an article by Harry Markowitz, titled "Portfolio Selection," established a framework for solving this problem in the financial arena. Although Markowitz theory drew little interest at first, it now influences many different financial models and is continually being reinvented to incorporate new findings. (Fabozzi, Gupta, & Markowitz, 2002). Now known as Modern Portfolio Theory (MPT), Markowitz's proposed calculations integrated both the *outcomes* (expected returns) and *risks* (return variance) of financial investments. This helps investors optimize financial portfolios by identifying *what* assets will maximize yield and minimize risk (Amu & Millegard, 2009). Finding the expected returns and variances of assets allows an investor to determine the most efficient investment options, which are plotted along an efficient frontier line. Assets, such as stock options, that plot to the right of the efficient frontier (blue line on Figure 1) are typically not worth the investment since they increase the portfolio's

exposure to risk, but *do not* increase the expected return. The efficient frontier concept helps prove the value of diversification, a commonly recommended investment strategy.
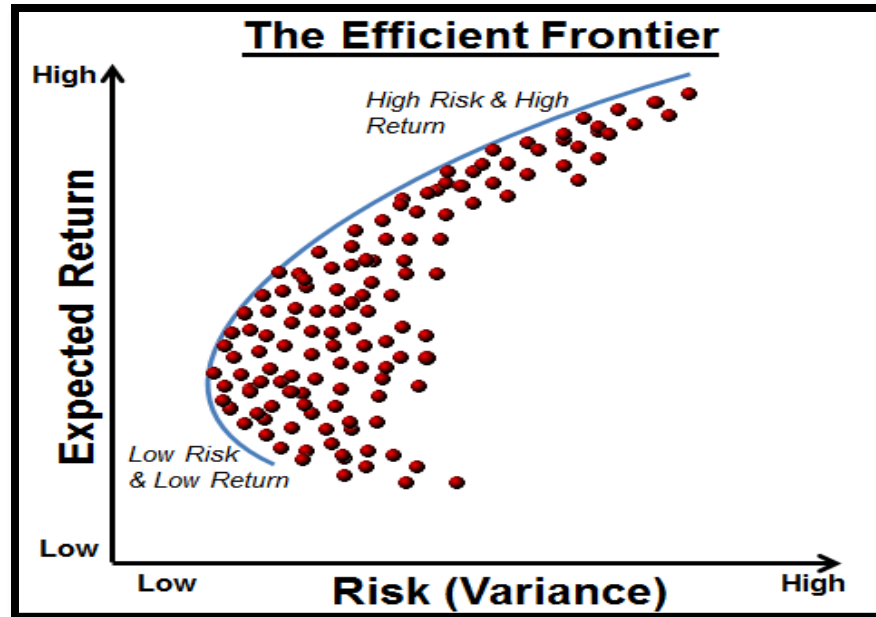
Figure 1. MPT and the Efficient Frontier

Given the variable commonality depicted in Table 5, Markowitz's Portfolio Theory may serve as a framework for developing a method to identify optimal leader behaviors. Leadership effectiveness and financial performance are both influenced by expected outcomes, varying options, limited resources, and risk. Careful selection of the right behavioral investments, or behavior portfolio, could prove just as valuable for a leader's development and performance, as it is for building an investor's financial portfolio. However, before proposing a behavioral version of Markowitz's model, it is best to clarify commonality and operationalize the variables.

Table 5

Investor and Leader Variable Commonality

USER	OUTCOMES (Dependent Variable)	OPTIONS (Independent Variable)	RESOURCE	RISK
Investor	Investment Returns	Financial Instruments	Money/Time	Return Variance
Leader	Performance	Leader Behaviors	Time	Performance Variance

Expected Outcomes: Performance Outcomes & Investment Returns. An important outcome for leaders is increased performance, which can subsequently improve various organizational outcomes. A general definition of performance is a goal relevant behavior, evaluated by how much it contributes to the desired goal (Nye, Su, Rounds, & Drasgow, 2012; Campbell, Gasser, & Oswald, 1996). An effective leader can drive performance variables by carefully employing the right behavior, at the right time, and within the right setting. Effective investors are no different, only they drive monetary returns through careful selection of the right financial instrument at the right time.

Varying Options: Leader Behaviors & Financial Instruments. As depicted in the leadership theory review, leaders have a daunting list of recommended behaviors, sometimes leaving more questions than answers. Many of the behavioral choices will have different follower outcomes based on a variety of factors already mentioned. Investors have a similar set of options only, instead of choosing behaviors, the options are among financial instruments. These instruments often include a complicated mix of commodities, securities, and common stocks. The biggest difference between leader options and investor options is within the decision selection process. The leader's behavioral options are often selected from instinct and on-the-job training, but investors normally consider outputs generated from specific financial models.

Limited Resources: Time & Money. Time is critical for leaders; they simply do not have the time to pursue every recommended behavior. Pursuit of an ineffective behavior, or even one that produces an inconsistent outcome, can subsequently waste a leader's time. Thus, it is ideal for leaders to select efficient behaviors that have both the greatest and most consistent performance outcomes. Investors also value efficiency. Although their limited resource is often money, time is also a consideration in terms of long and short term investment strategies.

Risk: Performance Variance & Return Variance. In the context of selecting optimal behaviors, the risk a leader faces is related to whether or not the desired effect on the criterion variable is consistently achieved. If a behavior is less predictable, or has a wide range of effects on performance, then a leader who chooses to employ this particular behavior risks achieving the desired outcome. Investors face the same dilemma. A highly variable stock, despite the expected return, is a risky financial instrument. Therefore, investors account for risk by calculating the return variance.

Constructing a leader behavior model in the image of MPT will require three sets of data: leader behaviors *(options)*, performance *(desired outcome),* and the performance variance *(risk)*. As highlighted previously, a wide range of recommended leader behaviors are already available. Also, the preponderance of leadership studies measure performance outcomes with an intent to identify effective leader behaviors. However, equal attention on negative aspects of leadership is needed to break away from typical studies (Hunter, Bedell-Aversb, & Mumford, 2007). Little attention is given to the actual risk, or potential down-side, associated with effective leader behaviors. The importance of assessing risk is intuitive with controversial behaviors, especially those associated with the dark triad of personalities (Paulhus & Williams, 2002). However, the significance of risk is less apparent with behaviors that are largely considered effective (praise,

feedback, etc.). Establishing a standard method to measure latent risk with performance variance is critical for developing an empirical model for optimizing a leader's behavior portfolio, or a conglomerate of effective behaviors. Viewing risk as variance is untraditional in behavioral science; the following section serves to justify this new approach.

Latent Risk of Effective Behaviors

Risk is commonly known as the possibility of loss, but its exact meaning differentiates across disciplines (Yates, 1992). As an example, a soldier will have a different outlook on risk (i.e. death or injury) than a football coach (i.e. loss or fired). There are many different ways to analyze risk within the behavioral domain: risk taking behaviors, risk management and assessments, and even through physiological components (Trimpop, 1994). However, these approaches analyze observable or known risk tradeoffs; none involve the measurement of latent risk associated with effective leader behaviors.

Performance variance is related to the following critical elements of risk: potential loss, significance of loss, and the uncertainty of loss (Yates, 1992). If leaders are only aware of the expected performance outcomes, and not the performance variance, they will blindly assume a given level of latent risk. This is similar to the novice investor that ignores the dramatic ebb and flow of a highly volatile stock, only to focus on the recent trend in high returns. In the leadership realm, performance appraisals are a great example of an effective behavior with high variance, as praise has been shown to produce little effect on motivating subordinates (Meyer, Kay, & French, 1965). A leader can invest a considerable amount of time with informal and formal feedback, but may fall short of achieving the intended (or projected) follower performance outcome. Therefore, this research posits to leverage performance variance to account for the

latent risk associated with a given behavior. Operationalizing risk in this fashion permits development of a behavioral model in the image of MPT.

Adopting an Investment Framework: *Leader Behavior Portfolio Model*

Utilizing the basic principles of MPT and adjusting the variables for use in the behavioral domain, a Leader Behavior Portfolio Model can be constructed. Figure 2 depicts the process model, highlighting the inputs, outputs, and potential functionality. Optimal performance behaviors are a function of three data inputs required for the model: 1) a selection of applicable leader behaviors; 2) the correlations between those leader behaviors and a given criterion variable (e.g., leader performance ratings); and 3) the leader behavior outcome variance.

A high positive correlation between a behavior and performance indicates an effective behavior. However, focusing on the correlation alone is not enough to produce an optimized set of leader behaviors, as it does not determine whether or not the behavior is efficient or reliable. Therefore, capturing the variance of the desired outcome is necessary to determine the efficiency of the specific behavior. Charting the leader behaviors based on its correlation to the desired performance outcome (y axis) and the performance variance (x axis) permits a quantitative comparison of behaviors.
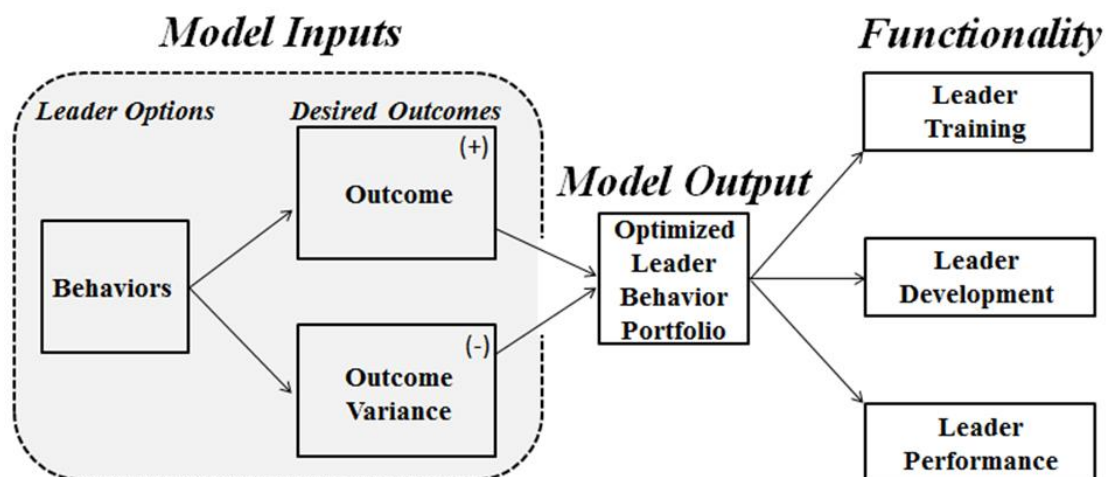
Figure 2. Process Model for Leader Behavior Portfolios

A hypothetical example of the model output is depicted in Figure 3. In this notional example, the most optimal leader behaviors are those with the highest correlations and the lowest variance. Therefore, behaviors that fall along an efficient frontier line (highlight in blue) are the most optimal leader behaviors given the specified criterion variable. Behaviors that plot in the bottom right area of the chart are least preferred, as they are less effective and have greater variance, or risk. Behaviors that plot in the upper right area have high correlations with the desired outcome, but the effects are highly unpredictable and may not impact the desired outcome as intended (e.g. toxic leader behaviors). Behaviors that fall into the bottom left have the lowest correlations, but are predictable due to the minimal variability.
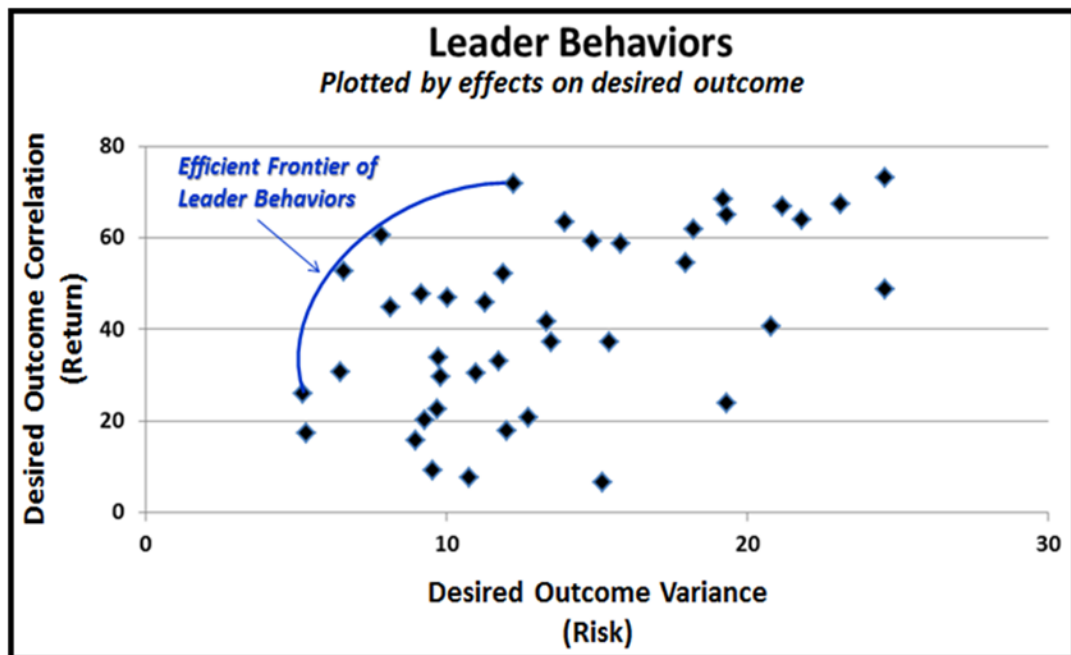
Figure 3. Model Output - Notional Example

The potential advantage of this model is versatility; it can integrate behaviors related to multiple leadership theories and situational contexts. Any mix of behaviors can theoretically populate the model. Although situational variables may change the values of the correlations,

they will not change the data collection and processing required for the model. Therefore, regardless of the situational dynamics (e.g. level of follower maturity) the model itself remains constant and will generate an output of optimal leader behaviors complimentary to the given context. Obviously, this model will not solve every leader challenge; nevertheless, it does have universal application in terms of optimal behavior recognition.

Model Functionality

Leader Training and Development. A considerable amount of leader development is often left to chance and there is no concrete way to reliably train great leaders (Mintzberg et al., 1998). A leader behavior portfolio tool that integrates the most effective behaviors can fill this training gap and serve as a fundamental building block for leader training and development. Specifically, this tool can aide the needs assessment phase, which is one of the major phases for developing an effective training program (Cascio & Aguinis, 2011). This initial step involves the identification of training requirements and has obvious importance, as any organization should ensure training is aligned with predetermined developmental goals. If the Leader Behavior Portfolio Model proves reliable and valid, then organizations can leverage the outputs to determine leader developmental goals and their related training plans.

Specifically, results of the model can be used to build blanket training programs across organizations. As an example, the US Army has the following three training domains: institutional, operational, and self-development (Headquarters, Department of the Army, 2014). If changes occur in the operating environment, and a new set of optimal behaviors are identified, an Army wide training program could be developed at the institutional level (e.g., The Command and General Staff College).

This model can also identify developmental requirements at the individual level to construct individual development plans. Evaluating leader strengths and weaknesses against the model's outputs can help determine a leader's developmental needs. If a leader is assessed as weak in performing any of the effective behaviors determined by the model, then the aim and priorities of the individual development plan can be adjusted accordingly.

Using the integrated Leader Behavior Portfolio Model to train and develop leaders should yield higher qualities of leader performance. If leaders are aware of the most optimal set of behaviors for a given situation, then it is reasonable to assume they will outperform those that are less informed. Leaders that are less informed are more susceptible to enacting less efficient behaviors based on instincts, anecdotal insights, or other sources that are subject to bias. This type of "gut-instinct" phenomenon has also been observed during employee selection decisions, when managers consistently prefer to rely on intuitive approaches (e.g., unstructured interviews) that are significantly less accurate than analytical decision aids (Highhouse, 2008). Given the importance of leader behaviors to organizational performance, using an analytical tool to complement intuitive judgment is paramount.

Leader Performance. Another expected outcome of this model is an increase in leader performance. If leaders are employing the most optimal set of behaviors identified by the model, then in turn, followers and supervisors should react more positively and show greater appreciation for those particular leaders. For example, the plan for this study is to test utility of the model by selecting the most optimal behaviors and confirm whether these optimal behaviors consistently produce the highest leader performance measures for cadets at the United States Military Academy (USMA). If the cadets at the academy employ the most efficient behaviors, then it is reasonable to hypothesize that they will obtain higher measures of overall performance.

It is important to reiterate here that the proposed leader behavior portfolio model is flexible and can be used to produce optimal behaviors for many constructs; leader performance of USMA cadets is only one example. For clarity, the intent of this study is to provide evidence for the utility of the proposed model and not necessarily to uncover new findings specifically related to leader performance at USMA.

Hypotheses

USMA evaluates their cadets utilizing the 23 groups of behaviors associated with the six broad attributes and competencies identified in the Army Leadership Requirements Model (Department of the Army, 2012). This requirements model portrays the taxonomy of Army leader expectations, broken down into three attributes (e.g. Character, Presence, Intellect) that depict internal characteristics and three competencies (e.g. Leads, Develops, Achieves) that include actions that leaders are expected to perform. Since these attribute and competency categories consist of defined behavioral sets, the terms competency, attribute, and behavior are interchangeable for the purpose of this study. Appendices A and B list the detailed behavioral descriptions of the attributes and competencies associated with the Leadership Requirements Model in Army Doctrine Publication (ADP) 22-2.

USMA evaluates these 23 behaviors for each cadet using a Periodic Development Review (PDR). PDRs are completed by supervisors and peers on multiple occasions throughout each semester. These cadet behaviors are evaluated using a Likert Scale from 1 to 4, with 4 being the highest positive rating. Ratings are used to assess developmental needs for each cadet, reinforce excellence, and correct behaviors that are not aligned with West Point's values (The Simon Center for the Professional Military Ethic, 2014). Since the PDR measures the Army's requirements for leaders, then leaders who master all 23 competencies and attributes should, in theory, be the most effective and subsequently receive the highest overall performance ratings. Since it is reasonable to conclude that most (if not all) cadets will never perfectly master all specified requirements, then which of the 23 behaviors are the most efficient?

Determining the behaviors that have the greatest influence on overall leader performance can help narrow the focus, allowing cadets to apply their time and energy on mastering the most optimal behaviors and improve their overall performance as a leader. Therefore, the following predictions will test the utility of applying the integrated leader behavior portfolio model to determine the optimal leader behaviors for cadets:

Hypothesis 1: Optimal behaviors determined from the Leader Behavior Portfolio Model will significantly predict overall leader performance ratings.

Hypothesis 2: Individuals will rate a leader profile that consists of optimal outputs (Profile 1) significantly higher than a leader profile consisting of the medium correlations and medium variances (Profile 2).

Hypothesis 3: Individuals will rate a leader profile that consists of optimal outputs (Profile 1) significantly higher than a leader profile consisting of the lowest correlations and highest variances (Profile 3).

Hypothesis 4: Individuals will rate leader behaviors associated with the highest correlations and lowest variances significantly higher than leader behaviors with the lowest correlations and the highest variances.

Method

Participants

Two groups of participants were used for this study: 5,641 cadets from the United States Military Academy (USMA) and 255 ROTC cadets/midshipmen from over 10 different academic institutions across the US. USMA provided the longitudinal archival data from 45,589 PDRs (an average of approximately 8 PDRs per cadet were received from 2015-2016) and overall performance ratings from each cadet. The ROTC cadets and midshipmen were asked to voluntarily evaluate leader profiles and behavioral statements constructed from the archival data obtained from the USMA cadet PDRs. All participants remained anonymous, were over 18 years of age, and did not receive compensation.

It is important to note that the ROTC respondents were specifically chosen because they represent emerging leaders in academic settings; therefore they are a true subset of the population of interest. If the optimal outputs inferred from the USMA data set are valid, then the leader portfolio model should generalize to both USMA and ROTC participants.

Design

The overall intent of this study was to test validity of the Leader Behavior Portfolio Model using leader performance ratings as the example criterion. The population of interest was emerging military leaders in institutional/academic settings. Archival data on cadet PDRs and overall performance ratings from USMA cadets served as the inputs to the leader portfolio model, resulting in the determination of an optimal set of leader behaviors. The optimal behaviors, plotted by their correlations and variance with overall performance ratings, were those

that fell along the efficient frontier line. The outputs of the Leader Behavior Portfolio Model were then used to craft leader profiles and behavioral statements.

ROTC cadets were then used to assess generalizability of the results by completing surveys to rank order both leader behaviors and leader profiles that were constructed using outputs from the proposed model. Survey results were then compared to the leader behavior portfolio outputs to assess consistency with the model.

Procedures

This study included four distinct phases: 1) collect pre-existing USMA PDR data; 2) identify optimal leader behaviors; 3) craft leader behavior profiles; 4) validate generalizability of the model through surveys.

Phase I: Collect Pre-existing Data. The pre-existing data source was available through the United States Military Academy's Leadership Development Branch, which administers and files Periodic Development Reviews (PDRs) on every cadet. PDRs are administered every semester and all cadets are rated on 23 behavioral competencies and attributes (rated on a scale from 1-4). Each cadet is also given a separate overall leader performance rating (rated on a scale of 1-3). The correlations and variance between the behavioral competencies and the overall performance ratings were calculated (Appendix C) and inserted into the Leader Behavior Portfolio Model (Figure 2) to generate an optimal list of effective leader behaviors.

Phase II: Identify Optimal Leader Behaviors. The optimal leader behavior list was constructed from behaviors that fall along the efficient frontier line depicted in Figure 4. Crafting the list using this quantitative process removes opinion and individual experience from the selection process, eliminating bias. Since leaders do not have time to focus on an endless set of behavioral options, five optimal behaviors were selected as the independent variables in the

cross-validation of two regression models designed to predict leader performance ratings *(Hypothesis 1).* Phase II concluded when cross-validation was complete.

Phase III: Craft Leader Behavior Profiles. Three types of leader profiles were constructed using the outputs of the proposed model and the associated behavioral descriptions from the Army's Leadership Requirements Model. Profile 1 was a composite of five behaviors along the efficient frontier, which were those with the highest correlations and lowest variance to overall performance ratings. Profile 2 was comprised of five behaviors with medium correlations and medium variance to overall performance ratings. Finally, Profile 3 consisted of five behaviors with lowest correlations and lowest variance to overall performance ratings.

This phase also included the construction of behavioral statements consistent with the PDR competency evaluations. Two groups of behavioral statements were selected. Group 1 was a set of behavioral statements (or descriptions) for six behaviors that fell near the efficient frontier line on the leader behavior portfolio output results. Group 2 was another set of behavioral statements for six behaviors that had the lowest correlations and highest variances; these behaviors are located at the bottom right of the chart of Figure 4, which portrays the Leader Behavior Portfolio Model outputs.

Both the leader profiles and behavioral statements were used to construct surveys that were administered to the ROTC participants. Survey questions directly consisted of the same behavioral descriptions included from the USMA PDRs and ADP 6-22 (Appendices A and B). Phase III was completed once all surveys were constructed using the Qualtrics survey tool.

Phase IV: Validate Generalizability of the Model. ROTC participants completed the surveys, constructed during Phase III, to score the leader profiles (Hypothesis 2 & 3) and behavioral statements (Hypothesis 4) associated with the Army Leadership Requirements Model.

Participants were granted approximately two weeks to complete the 15-20 minute survey and the following ROTC departments offered support for the study: The University of South Florida, The University of Tampa, Western Illinois University, Virginia Military Institute, Pennsylvania State University, Florida State University, University of California Los Angeles, The Ohio State University, and Lock Haven University of Pennsylvania. ROTC departments were selected at random with consent from the Professor of Military Science at each institution. Surveys had a section for rank-ordering the leader profiles and another section to rank-order the behavioral statements associated with each competency or attribute.

A randomized block design was used to compare the leader profiles and the two groups of six behavioral statements. The three leader profile options were randomly presented and this section was scored from 1 (most preferred) to 3 (least preferred). ROTC participants rank ordered three profile options (Appendix D) using the following prompt: *Please rank order (from 1 to 3) the following leader profiles based on their potential for superior performance.*

Six statements that reflect behaviors along the efficient frontier line and six statements that reflect behaviors with the lowest correlations and highest variance were also compared (Appendix F). Response options were scored from 1 (most preferred) to 4 (least preferred). Two prompts were used as a reference point for the participants to rank order their preferences:

Prompt 1: *I would MOST LIKELY prefer to work with a leader that…*

Prompt 2: *The following behaviors are MOST effective for junior leaders to employ:*

Data Analysis

The data analysis, summarized in Table 6, consisted of one cross-validation check and three within subjects design Analysis of Variance (ANOVAs). As stated in Phase II, the optimal behavior outputs were the independent variables for a regression model predicting performance ratings. PDR ratings from the USMA archival data set were divided into two groups through random assignment. The regression model from the first group was compared to the regression model of the second group in order to calculate the amount of R^2 shrinkage and determine model stability *(Hypothesis 1)*. The ANOVAs were then calculated to determine whether significant differences existed between the survey scores for each leader profile category *(Hypotheses 2 & 3)* and between the survey scores on the two groups of behavioral statements *(Hypothesis 4).* Since each respondent scored all profiles and behavioral statements, a randomized block design was used to control for any nuisance variables that may have been introduced through any of the participants. Multiple survey versions were constructed to ensure all possible question orderings were randomly presented to each respondent, mitigating confounding concerns by properly balancing the survey questions throughout the sample.

Table 6

Hypothesis Testing Summary

Hypothesis	Description	Analysis
1	Optimal behaviors determined from the Leader Behavior Portfolio Model will significantly predict overall leader performance ratings	Regression Cross-Validate
2	Individuals will rate Profile 1 (highest r, lowest s^2) significantly higher than Profile 2 (medium correlations and medium variances)	One-Way, Within Subject ANOVA
3	Individuals will rate Profile 1 (highest r, lowest s^2) significantly better than Profile 3 (lowest r, highest s^2)	One-Way, Within Subject ANOVA
4	Individuals will rate leader behaviors associated with the highest r and lowest s^2 significantly better than behaviors with the lowest r and the highest s^2	One-Way, Within Subject ANOVA

Results

Significance was found for all four hypotheses, indicating that the Leader Behavior Portfolio Model is reliable and valid for determining optimal behaviors for emerging leaders in an academic setting. Figure 4 shows the outputs of the leader behavior portfolio model. The correlations reflect the relationship between the 23 behaviors from the USMA PDR and the overall leader performance ratings for USMA cadets. The behavioral correlations plotted along the y-axis were all positive and ranged from .150 (*Physical Fitness*) to .396 (*Discipline*). The behavioral variances plotted along the x-axis represent the rating variability of each USMA PDR behavior and ranged from 0.74 (*Confidence*) to 2.24 (*Extends Influence Beyond the Chain of Command*). The highest correlations reflect the behaviors with the strongest associations with overall leader performance ratings, while the behaviors with the highest variability represent greater inconsistencies (or greater risk) with performance outcomes.
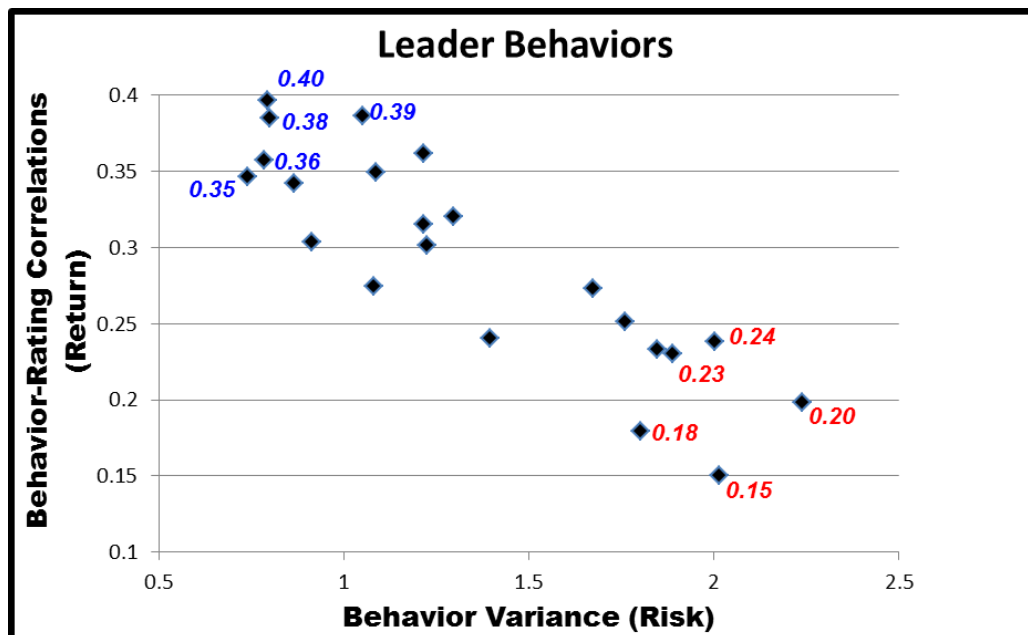
Figure 4. Leader Behavioral Portfolio Model – Results of 23 Behaviors from USMA PDRs

In sum, the behaviors plotted to the upper left of Figure 4 (highlighted in blue) are most optimal, as they have the greatest correlations with overall performance ratings and the lowest variance. Behaviors distributed to the bottom right of the chart are least optimal (highlighted in red), as they reflect behaviors with the lowest correlations and highest variance.

Hypothesis 1

Analysis of the USMA archival data revealed that all correlations between the 23 PDR behaviors and overall performance ratings were positive and significant ($p = .000$). Five optimal behaviors that fell along the efficient frontier line, those with the highest correlations and lowest variance, were selected to build a linear regression equation. The five behaviors were *Discipline* ($r = .396$, $p = .000$; $s^2 = 0.795$), *Gets Results* ($r = .386$, $p = .000$; $s^2 = 1.05$), *Professional Bearing* ($r = .385$, $p = .000$; $s^2 = 0.80$), *Communicates* ($r = .357$, $p = .000$; $s^2 = 0.79$), and *Confidence* ($r = .347$, $p = .000$; $s^2 = 0.74$). After identifying these five optimal behaviors, the USMA sample was randomly split into calibration and validation sample sets in order to build and cross-validate a regression model. Using the calibration sample to predict the overall leader performance ratings with these five independent variables produced the following standardized regression equation: *Overall Rating = .163*Discipline + .130*ProfessionalBearing + .158*GetsResults + .086*Confidence + .085*Communicates*. The results of the regression analysis (Table 7) indicate that behaviors falling along the efficient frontier line explain 23.7% of the variance for overall leader performance ratings, $R^2 = .237$, $F(5, 22,794)=1,415.65$, $p < .001$.

Applying this model to the validation sample produced a predicted R^2 of .232. The overall R^2 shrinkage (.005) is $<$ .10, indicating that the model outputs cross-validated (Kleinbaum, Kupper, Nizam, & Rosenberg, 2013) and that the optimal behaviors determined from the proposed model significantly predict overall leader performance ratings (H1).

Table 7

Linear Regression Model for Predicting Leader Overall Performance Ratings

Model	N	R^2	Predictor	B	SE(B)	β
Original	22,795	0.237	Constant	1.307**	.013	
			Discipline	.095**	.005	.163
			Gets Results	.080**	.004	.158
			Professional Bearing	.075**	.004	.130
			Confidence	.052**	.005	.086
			Communicates	.050**	.004	.085

*Note: **indicates p < .001, B = unstandardized coefficient, β = standardized coefficient*

Hypotheses 2 & 3

The five behaviors along the efficient frontier line used to build and cross-validate the regression model were also used to construct Profile 1. Profile 2 was comprised of the following five behaviors that had medium correlations and medium variance: *Creates a Positive Environment* ($r = .274$, $p = .000$; $s^2 = 1.08$), *Develops Others* ($r = .233$, $p = .000$; $s^2 = 1.85$), *Leads Others* ($r = .273$, $p = .000$; $s^2 = 1.67$), *Empathy* ($r = .240$, $p = .000$; $s^2 = 1.39$), and *Innovation* ($r = .251$, $p = .000$; $s^2 = 1.76$). Finally, Profile 3 was constructed with the following behaviors (highlighted in red on Figure 4) that had the lowest correlations and highest variance: *Physical Fitness* ($r = .150$, $p = .000$; $s^2 = 2.01$), *Builds Trust* ($r = .230$, $p = .000$; $s^2 = 1.89$), *Extend Influence Beyond Chain of Command* ($r = .198$, $p = .000$; $s^2 = 2.24$), *Resilience* ($r = .180$, $p = .000$; $s^2 = 1.80$), and *Steward the Profession* ($r = .238$, $p = .000$; $s^2 = 2.00$). The behaviors for each profile were then consolidated into profile descriptions (Appendix D) for inclusion in the survey used to validate generalizability of the model outputs.

ROTC respondents (N = 255) rank ordered each of the three leader profiles from 1 to 3 (1 was the highest) based on the leader profile's potential for superior performance. Figure 5 depicts the frequency in which each profile was ranked #1 (the most preferred) and shows favorability for the profile built from behaviors along the efficient frontier. Appendix E contains the total scoring data for each leader profile, also showing that Profile 1 was scored as the most preferred ($M = 1.72$, $SD = 0.050$) by the ROTC respondents.
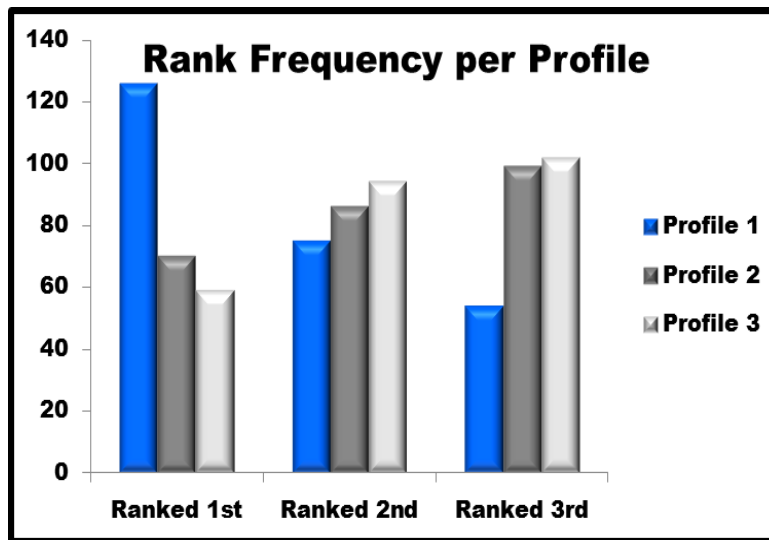
Figure 5. Leader Profile Rank Frequency Chart

The one-way ANOVA showed a statistically significant difference between at least one of the three leader profiles, $F(2, 253) = 16.496$, $p < .0001$. The Bonferroni comparison revealed that Profile 1 ($M = 1.72$, SD = .050) received the best ratings and scored significantly better than both Profile 2 ($M = 2.11$, SD = .051) and Profile 3 ($M = 2.17$, SD = .049). These findings support the proposal that leader behaviors that plot along the efficient frontier line are optimal, as respondents scored them more favorably over behaviors with medium correlations/medium variance (H2) and behaviors with the lowest correlations/highest variance (H3).

Table 8

One Way ANOVA Leader Profile Results

	df	Sum of Squares	Mean Square	F-Value	P > F
Model (SSB)	2	30.878	15.439	16.370	< .0001
Error (SSW)	508	479.122	.943		
Corrected Total	510	510.000			

Hypothesis 4

Hypotheses 2 and 3 were related to the effects of profiles created by combining descriptions of behavioral sets from the PDR and Army Leader Requirements Model. In order to ensure that one or two particular behaviors were not driving the preference rankings for those amalgamated profiles, it was prudent to verify that comparisons of the individual behaviors would produce similar preference results. Therefore, the six individual behavioral statements along the efficient frontier line (Group 1) were compared with the six individual behavioral statements that had the lowest correlations and highest variance (Group 2).

ROTC respondents ($N = 217$) rank ordered 18 different blocks of four randomly presented statements (Appendix F). Each block contained two statements from Group 1 and two statements from Group 2. The two survey prompts highlighted previously were used as frames of reference to compare, by rank order, behavioral statements between Group 1 and Group 2. Each respondent was randomly presented each of the 12 statements exactly 6 times; 3 times per prompt with 4 statements per randomized block. Individual statements were rank ordered from 1 to 4 (1 was the highest) for each random block.

Figure 6 depicts the frequency in which the behaviors from each group were ranked #1 (the most preferred). The graph compares the results of each prompt and the overall total by group, clearly reflecting that optimal behaviors identified by the Leader Behavior Portfolio

Model were preferred by ROTC respondents. Appendix G captures the individual results of each

behavioral statement from Group 1 and Group 2 and their total rank order scoring quantities.
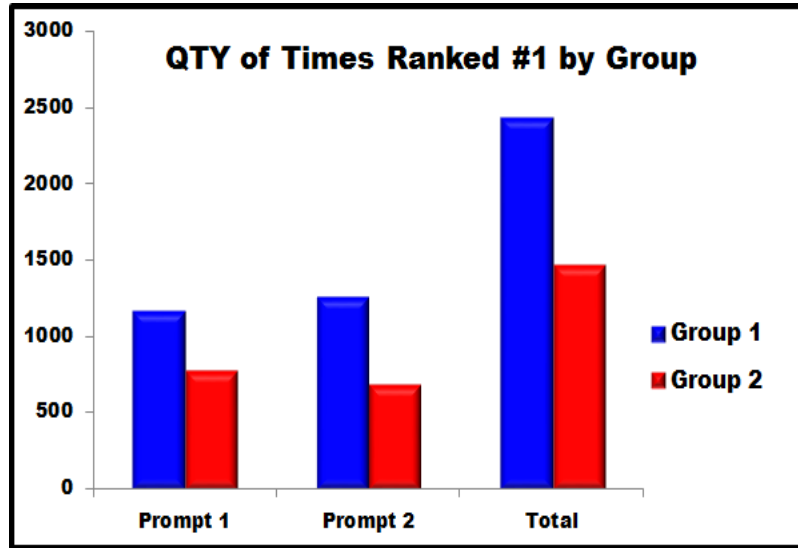
Figure 6. #1 Rankings Group Comparison

In order to test for significant differences between the two groups of statements, total

rank ordering scores were calculated based on rank position (rank order #1 = 1, rank order #2 =

2, etc.). Therefore, behaviors with the lowest total scores would reflect the most preferred items.

Scores for each behavioral statement were summed in each randomized block, by group and per

prompt, (217 respondents, two prompt sections). The one-way within subjects ANOVA, $F(1,$

$216) = 63.418$, $p = .000$), showed that aggregate scores for behavioral statements along the

efficient frontier line ($M = 83.55$, SD $= .81$) were significantly better than scores for behaviors

with the lowest correlations and highest variance ($M = 96.45$, SD $= .81$). These findings were

consistent across both survey prompts, showing support for leader behaviors that plot along the

efficient frontier line are optimal and will be scored more favorably over behaviors with the

lowest correlations and highest variance (H4).

Table 9

One Way ANOVA Behavioral Statement Results

	df	Sum of Squares	Mean Square	F-Value	P > F
Model (SSB)	1	18038.72	18038.72	63.418	< .0001
Error (SSW)	216	61439.28	284.441		
Corrected Total	217	79478.00			

Discussion

The findings in this study show support for adopting MPT to identify optimal leader behaviors. Profiles constructed from behaviors along the efficient frontier and the individual behaviors themselves consistently ranked higher than other behaviors assessed from the Army Leader Requirements model. Analyzing leader behaviors by their correlations with performance and variability can help leaders manage their time, focusing on high payoff behaviors that consistently maximize performance and minimize risk. Although many experienced leader-practitioners have solid behavioral repertoires they have built over time, these are often formed slowly through mentorship, anecdotes, and trial and error approaches in the workplace. These common practitioner approaches have great value, but lack empirical methods for determining the most efficient behaviors. The Leader Behavior Portfolio Model can expand beyond traditional methods of leader development, granting leaders access to more precise information about the effectiveness and efficiency of their behavioral options.

Potential Benefits

Leader Training and Development. As alluded to in the section describing functionality, a universal tool that provides an integrated output of the most optimal leader behaviors is overdue and can advance leader training, development, and performance. Organizations can provide their own relevant inputs for the Leader Behavior Portfolio Model and leverage the outputs to determine leader developmental goals that complement that specific organizational. As the survey rankings suggest, leaders that develop and employ the optimal behaviors identified by the model are viewed more favorably and are projected to outperform

their counterparts. The results of this study strongly support these findings, as the ROTC respondents showed the greatest appreciation for the profile constructed of behaviors from the efficient frontier line. Without this new analytical tool, leaders will continue to depend on traditional leader development methods and potentially prioritize the employment of less efficient behaviors derived from their instincts or personal experience. Again, this is not to suggest that traditional based methods do not have tremendous value. However, augmenting experienced-based information with this empirical tool can increase awareness, remove bias, and standardize the weighting and comparison of a wide range of leader behaviors. Given the importance of leader behaviors to organizational performance, using this tool to complement intuition and experience is prudent.

Accounting for Latent Risk. Along with performance relevance, the model uniquely captures behaviors with the greatest performance variance. This variance reflects the latent risk associated with employing each behavior, as the intended result may be inconsistent or fall short of a desired outcome. As an example, the study revealed that behaviors associated with *Physical Fitness* and *Extending Influence Beyond the Chain of Command* had relatively high variance and low correlations. Emerging leaders that overly emphasize the employment and mastery of these two particular behaviors, at the expense of the other 21 behaviors in the Army Leader Requirements model, would be investing in the two most volatile investment options. The results can be counterproductive, as leaders could spend an exuberant amount of time perfecting these behaviors that have low associations with leader performance and comparatively inconsistent results. This is not to suggest that displaying *Physical Fitness* and *Extending Influence Beyond the Chain of Command* are not effective behaviors; they do have positive correlations with overall leader performance ratings. However, the PDR archival data and

survey responses indicate that these particular behaviors were inferior to those that fell along the efficient frontier line. Therefore, it is sensible to prioritize the mastery and employment of behaviors with the highest correlations and lowest variance in order to achieve a stronger, more predictable return on leader performance. Leaders with limited time, and ever-increasing workloads, cannot afford to invest in behaviors with lower correlations and high variance; it is simply too risky. Instead, prioritizing based on the outputs of the Leader Behavior Portfolio Model can ensure leaders are developing and/or employing the most optimal behaviors first.

Model Versatility. The Leader Behavior Portfolio Model is flexible and, with the right data, can be applied to any situation in order to compare and contrast leader behaviors. It is well known that leader behaviors deemed successful in one organization, may completely fail in another; there is no universal leadership style (Bolden et al., 2003). Fortunately, the Leader Behavior Portfolio Model is an integrative tool that breaks through the litany of theoretical barriers to compare the projected outcomes and variances of any relevant behavior of interest. This is a significant advantage of the model, as the literature is overflowing with leadership recommendations and "best practices" that may or may not apply broadly. Since leader performance is hinged to situational dynamics (Fiedler, 1965; Pires da Cruz, Nunes, & Pinheiro, 2011) and there is no single leadership approach that is effective for all situations, a flexible model is valuable for matching the most optimal leader behaviors with each situation of interest. Inputs of the Leader Behavior Portfolio Model are pulled directly from the specific contextual environment, so the outputs of the model are directly applicable regardless of the level of follower maturity, amount of task structure, or degree of the leader's authority (Fiedler, 1965). For instance, inputs for the study were pulled from a cadet population in an academic environment and the model outputs proved transferrable to other cadets in similar academic

environments. As long as the input data for the model are consistent with the leader's environment, then the results are relevant.

Using the current study as an example, results indicated that *Extending Influence Beyond the Chain of Command* had a low correlation with overall performance ratings of emerging military leaders in academic settings. However, this particular behavior could score differently if the data was derived from senior military leaders instead of cadets. Senior military leaders are often required to bridge key partnerships with important stakeholders and their success is sometimes tied to their political finesse and diplomatic savvy. Therefore, a model populated with data collected from senior leaders would capture these potential differences, likely yielding a higher correlation and lower variance for *Extending Influence Beyond the Chain of Command.* This type of flexible tool is important to the leadership domain, as the effectiveness of leader behaviors can fluctuate due to a variety of factors.

Theoretical Implications

The model can also be used to further develop and integrate among existing leadership theories. It can compare behavioral subsets of any existing theory or behaviors across multiple theories, as any mix of behaviors can populate the model. This integrative capability can take future research a step beyond any single perspective, providing greater insights regarding behavioral options derived from multiple theories and experience-based best practices. Regardless of the theoretical roots of the behaviors, the model will still generate an output of optimal leader behaviors complimentary to the given context. This has wide implications for bridging the gaps between existing leadership theory, offering a standard method to integrate and compare a theoretically diverse set of leader behaviors. The model design offers the flexibility to test behavioral based leadership theories in two primary ways.

Single Theory Analysis. The model can help confirm or deny the most optimal behaviors described for any one particular theory. As an example, a researcher that wants to assess range of applicability for transformational leadership can select the desired performance criteria (e.g. subordinate motivation) and collect the data relevant to its primary leadership styles. The model can then compare the effectiveness (correlation) and risk (variability) of the 29 behaviors from each transformational style and make the appropriate judgements about which style or behavioral subsets are most optimal for the given performance criteria.

Standard Integrative Tool. The model is well-suited for testing integrative theories, such as the Full-Range Theory of Leadership (Avolio and Bass, 1997) that combines components across multiple leadership theories. It is also consistent with Fiedler's (1965) Contingency Theory, since implementation among varying contexts will produce situationally relevant outputs. However, application is not limited to these two theories. The model offers a standardized method to simultaneously compare behaviors between multiple leadership theories, serving as a broader tool for identifying the most optimal set of leader behaviors, regardless of their theoretical origin.

In fact, the Army Leader Requirements model used for this study was constructed from behaviors that are tied to the behavioral subsets of a multitude of leadership theories. Army leadership doctrine includes a composite of effective behaviors rooted in the Power Approach (e.g. *Expertise, Military and Professional Bearing*), LMX (e.g. *Empathy, Interpersonal Tact, Creates a Positive Environment, Builds Trust*), Contingency Theory and the Hersey-Blanchard Leadership Model (e.g. *Communication, Confidence, Develop Others, Mental Agility*), Action Centered Leadership (e.g. *Gets Results, Discipline, Communication, Develops Others*), and Transformational Leadership (e.g. *Innovation, Leads Others, Army Values, Warrior Ethos*). Despite the linkage of these behaviors to an array of different theories, the Leader Behavior Portfolio Model

was still able to compare and identify the optimal set of behaviors for emerging leaders to develop and employ in an academic environment.

Practical Implications

As stated previously, the intent of this study was to explore the utility of adopting MPT methods for determining optimal behaviors. However, it is worth noting the practical relevance of the findings. First, the 23 leader behaviors prioritized by the Army were positively correlated with leader overall performance ratings. These results are reasonable, as they were chosen by the Army based on past success rather than by random selection. The Army is also well-known for producing great leaders and takes great care in orchestrating leader development strategies. Consequently, it is not surprising that their 23 competencies and attributes have significant correlations with leader performance. Second, clear differences were found among the behaviors, as the respondents did show very strong preferences for the derived optimal behaviors. These empirical findings can also be justified qualitatively.

Qualitative Analysis of Optimal Behaviors. The most optimal behaviors on the efficient frontier line (*Discipline, Military and Professional Bearing, Gets Results, Confidence, Communicates,* and *Values)* are heavily emphasized and critically important to military operations. As a leader with over 17 years in the Army, I can attest that these particular behaviors are strongly engrained into the Army's leadership culture. They are also highly influential to a unit's success and strongly associated with both with leader's overall performance and overall ratings. The purpose of this section is to provide, from a leader-practitioner perspective, a qualitative synopsis for each behavior identified as optimal by the empirical model.

The *Values* ($r = .342$, $s^2 = .867$) attribute received the best rank order scores from the ROTC respondents, averaging an overall ranking of 2.05. Each military service has its own

complementary set of values that are published and promulgated throughout the organization. Although each service has a slightly different list, their values have a consistent theme of duty and excellence, selfless-service, loyalty, and integrity. Irrespective of any differences, both midshipman and cadets indicated that service values were highly important to leader performance. There are two logical explanations for the *Values* preference. First, when shortcomings in values are exposed, a leader's ability to perform is overshadowed and degraded. A leader lacking core values that are shared by an organization can face a litany of challenges including the degradation of trust and respect; unnecessary distractions from organizational achievements; and an ensuing erosion of their follower's own values. Second, values are a clear priority for the services and are continuously reiterated through training and mentorship. This is particularly true in academic settings, where the fundamentals of leadership are first introduced to a new generation of leaders.

The next two competencies, *Gets Results* ($r = .386$, $s^2 = 1.049$) and *Communicates* ($r = .357$, $s^2 = .786$), both scored a rank order average of 2.07, which is the second best score of all behaviors evaluated with the survey. Again, there is strong qualitative support for these two behaviors. *Gets Results* is both an explicit and implied core performance measure. Followers and mentors alike want to work with winners; leaders who consistently produce positive and tangible results are favored. It is difficult, and rare, to negatively rate the performance of a leader that provides clear direction and consistently excels during task execution. On the other hand, when the intended results of an operation are not achieved, shortcomings with the other 22 behaviors are often carefully noted. Thus, *Gets Results* often serves as a benchmark of performance success, acting as a frame-of-reference regarding the judgment of a leader's other

attributes or competencies. Finally, due to the gravity of "getting the job done" to national security, the stressed importance within the military culture is logical and necessary.

The *Communicates* competency is complementary to *Getting Results* and has understandable importance to overall leader performance, as it is essential for articulating vision and leading others to achieve a desired end-state. A skilled communicator understands how to direct and influence an organization. This includes providing and receiving important feedback; disseminating the strategy and goals of an organization in a clear, convincing manner; and building strong relationships with followers. A leader with poor written and verbal communication skills will face extensive challenges earning follower buy-in; guiding an organization; and instilling the type of confidence that can contribute to superior performance. Poor leader communication disrupts the flow of information, potentially leading to poor decisions and improper execution. The ROTC respondents clearly recognize the importance of both *Getting Results* and *Communicates*, appreciating their link to high performance and expressing their preference to work with leaders that possess these two optimal competencies.

The *Discipline* ($r = .396$, $s^2 = .795$) rank order average was 2.41 and is a long-standing attribute that is strongly coveted by military organizations. The harsh nature of military operations can require subordinates and leaders alike to perform unthinkable acts of valor and to promptly follow direction while confronting danger. Therefore, it can be difficult for leaders to receive high performance ratings if they fail to display behaviors that reflect proper military discipline. Individuals also tend to emulate the actions of their leaders; when leaders display poor discipline themselves, subordinates often follow. Subsequently, as discipline degrades, organizational performance can erode and reflect poorly on leader performance.

The importance of behaviors that reflect *Confidence* ($r = .347$, $s^2 = .741$) are also stressed for Army leaders. Although the rank order average was a little higher at 2.44, the statement reflecting this behavior was still ranked at #1 more often than 5 of the 6 suboptimal behaviors from Group 2. Again, this is not a surprise since leadership development programs in the military are peppered with training events that build confident leaders with assertive decision-making skills. This fact may be most apparent with the Army's obstacle course training, in which the sites are actually labeled "confidence" courses. Designed to physically and mentally challenge participants, the confidence course helps leaders control emotions, maintain composure from fear, and ultimately develop the self-confidence needed to operate in austere and dangerous environments. Confidence is aligned with leader performance, as it is difficult to lead with passive uncertainty. Leaders lacking this attribute are often quickly exposed in military environments and can lose their ability to properly influence followers, especially in times of crisis.

The last behavior identified as optimal during the study was *Military and Professional Bearing* ($r = .385$, $s^2 = .801$), with a higher than expected rank order average of 2.89. This was the worst rank order score of the six behaviors that fell along the efficient frontier line and was only ranked #1 by the ROTC respondents 193 times, which was less than 15% of the time. Furthermore, three of the supposedly suboptimal behaviors from Group 2 were actually ranked higher than *Military and Professional Bearing*. These findings could be an anomaly given the consistently superior survey results for the other five optimal behaviors. However, it also seems possible that differences between the applied academic setting and the survey questionnaire could have generated this one inconsistency. First, studies suggest that followers tend to *subconsciously* prefer leaders based on their visual characteristics because they are perceived as

having a desired personality or ability appropriate for leadership (Little, 2014; Pillemer, Graham, & Burke, 2014). Since *Military and Professional Bearing* is tied to the image of authority and presence a leader portrays visually, then leaders scoring high in this attribute may also receive a stronger preference from their followers. The analysis of the PDR archival data and results of the leader behavior portfolio model were consistent with this concept. However, these results differed when ROTC repsondents were asked to rank-order the behaviors for the survey. The divergence may have occurred from the respondents *actively* considering whether the portrayal of professional image is an effective leader behavior. When asked directly, respondents may feel that maintaining a professional bearing should not matter, but subconsciously prefer these visual qualities in an applied setting.   Therefore, despite the survey results, I would not dispense of *Professional and Military Bearing* as one of the optimal behaviors. Yes, the survey suggested that other behaviors are more favorable, but the correlations and variance of this attribute in an actual setting indicated a strong and consistent association with overall leader performance ratings.

Watch Items for Model Application. While doing this research, it was observed that model construction and survey validation required extreme care. First, it is important to populate the model with data that complements both the contextual environment and population of interest. For Example: model outputs from data on senior, high-level leaders may not apply to mid-level managers. Likewise, if the data is collected from leaders in a private, for-profit organization, then it may not generalize to leaders from a military organization. Therefore, the collection of data that is complementary to the population and setting is important when designing the model. Also, behaviors that do not produce significant correlations with the criterion of interest should not be included in the model since they are not statistically relevant.

Finally, any attempts to test validity of the model through surveys, as done in this study, must be deliberate. Randomly presenting and comparing multiple behavioral statements using a minimal amount of survey questions is challenging and confounding problems can occur if the survey format is improperly constructed. This is especially true when utilizing internet survey tools (e.g. Qualtrics) that have features to automate the random presentation of questions and statements. Although these tools are valuable and user-friendly, they may not automatically randomize exactly as needed. For instance, the Qualtrics randomization feature used for this study presented each behavioral statement randomly, but only equally <u>across</u> all surveys and not necessarily <u>within</u> each individual survey. Thus, it proved critical to validate the pilot data and re-construct the survey in a manner that ensured each behavioral statement was equally presented to each respondent.

Conclusion

Leadership is a complex and heavily debated concept with vast implications for both private companies and government organizations. A standard, quantitative method to compare and contrast leader behaviors is needed so both practitioners and researchers can integrate and build upon applied findings and theoretical contributions. This study showed promising support for adopting the principles of Modern Portfolio Theory to examine the litany of options and create an optimal set of leader behaviors. The Leader Behavior Portfolio Model, constructed with behavior correlations (return) and variance (risk), was valid at predicting an integrated set of optimal behaviors and generalizing to the population of interest.

Limitations

The support for the Leader Behavior Portfolio Model in this study was restricted to a military sample only. Whether or not this model will apply to broader groups of leaders is yet to be seen. Furthermore, the model was only tested with emerging leaders; the flexibility assumptions remain untested. Although it seems probable the model will work for varying types of leaders, studies involving non-military leaders with various experience levels are needed.

Another shortfall of this model is linked to time, arguably the leader's most valuable resource. The Leader Behavior Portfolio Model can certainly help prevent leaders from wasting precious time on employing inefficient behaviors. However, the model does not account for the actual time required to perform each behavior. Since leader behaviors are not created equal, it may be important to weight the amount of time required to perform each behavioral option. For instance, one or more of the optimal behaviors determined by the model may require an

exuberant amount of time to employ effectively. If a "less efficient" behavior takes far less time, then it may be wise to employ this behavior under certain conditions. Unfortunately, the Leader Behavior Portfolio Model does not currently include any method to calculate behavior performance time, leaving the time management aspect to leader intuition.

Finally, it is important to acknowledge that this particular study was scenario based; no behaviors were directly observed during the research process. Since dependency on survey response data is problematic in leadership research (Hunter, Bedell-Avers, & Mumford, 2007) and can obscure the accuracy of the model (e.g. *Military and Professional Bearing* results), it would be beneficial to replicate using a behavioral study.

Future Research

In addition to advancing research to address the limitations described above, future studies should also focus on uncovering which leadership styles and behaviors should be integrated for optimal performance across a variety of common settings. As an initial step, behavioral correlations and variance could be collected from existing studies in order to build a large data file for populating the Leader Behavior Portfolio Model. This approach gets at the low-hanging-fruit available to further test the model and build upon previous research on leadership.

Populating this model with the correlations and variance of behaviors associated with dark leader traits may also prove useful, especially if they are compared with more benign behaviors that are traditionally considered more effective. Accounting for the latent risk of these behaviors could help confirm or deny beliefs associated with dominant leadership styles that are embraced in certain results-oriented environments, yet identified as antecedents to toxic leader behaviors (Steele J. P., 2011). Since dark traits have both advantages and disadvantages,

identifying the most efficient behaviors associated with dark personalities could answer some important questions regarding the situations and level in which they are useful (Spain, Harms, & and Lebreton, 2013).

Despite the limitations and infancy of the proposed Leader Behavior Portfolio Model, future research in this area can add significant value to both theoretical development and leader performance. On the theoretical front, the model's ability to compare behaviors across multiple theories can allow researchers to uncover the component behaviors that are complementary to different situational variables (Fiedler, 1965; Yukl G., 2012; Rauthmann, et al., 2014). In terms of leader performance, outputs of this model can provide leaders with more precise, empirical information to complement their intuition and practical experience. Adopting the basic calculations behind MPT to build leader behavior portfolios can propel leaders beyond the "gut-instinct" approach and lead to an information-to-decision style of leadership.

References

Adair, J. (1973). *Action-Centred Leadership.* McGraw-Hill.

Amu, F., & Millegard, M. (2009, February 9). *Markowitz Portfolio Theory.* Retrieved from Citeseer: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.145.90&rep=rep1&type=pdf

Antonakis, J., Avolio, B. J., & Sivasubramaniam, N. (2003). Context and leadership: An examination of the nine-factor full range leadership theory using the Multifactor Leadership Questionnaire. *The Leadership Quarterly, 14*, 261-295.

Avolio, B. J. (2007). Promoting more integrative strategies for leadership theory-building. *American Psychologist*, *62*(1), 25-33.

Avolio, B. J., & Bass, B. M. (1994). *Improving organizational effectiveness through transformational leadership.* Thousand Oaks: Sage Publications.

Avolio, B. J., Walumbwa, F. O., & Weber, T. J. (2009). Leadership: Current theories, research, and future directions. *Annual Review of Psychology, 60*, 421-429.

Avolio, B. J., & Bass, B. M. (1988). *Transformational leadership, charisma, and beyond.* Lexington: Lexington Books.

Bass, B. M. (1990). *Handbook of leadership: Theory, research, and managerial applications, 3rd edition.* New York: The Free Press.

Bass, B. M., & Riggio, R. (2008). *Transformational leadership 2nd edition.* Mahwah: Lawrence Erlbaum Associates.

Bass, B., Avolio, B., & Goodheim, L. (1987). Biography and the assessment of transformational leadership at the world-class Level. *Journal of Management*, *13*(1) 7-19.

Biscontini, T. (2015). *Transactional leadership.* Ipswich: Salem Press Encyclopedia.

Blake, R., & Mouton, J. (1964). *The Managerial Grid: Key orientations for achieving production through people.* Houston: Gulf Publishing Company.

Bolden, R., Gosling, J., Marturano, A., & Dennison, P. (2003). *A review of leadership theory and competency frameworks.* Exeter, UK: Centre for Leadership Studies.

Burns, J. (1978). *Leadership.* New York: Harper and Row.

Campbell, J. P., Gasser, M. B., & Oswald, F. L. (1996). The substantive nature of job performance variability. In K. Murphy, *Indvidual differences and behavior in organizations* (pp. 258-299). Hillsdale, NJ: Erlbaum.

Cascio, W., & Aguinis, H. (2011). *Applied pscyhology in human resource management, 7th edition.* Upper Saddle River, NJ: Prentice Hall.

Dansereau, F., Graen, G., & Haga, W. (1975). A vertical dyad linkage apporach to leadership within formal organizations: A longitudinal investigation of the role-making process. *Organizational Behavior and Human Performance, 13*, 46-78.

Department of the Army. (2012, September 10). Army Leadership. *Army Doctrine Publication 6-22*. Washington, DC.

Derue, S. D., Nahrgang, J. D., Wellman, N., & Humphrey, S. E. (2011). Trait and behavioral theories of leadership: An integration and meta-analytic test of their relative validity. *Personnel Psychology*, *64*, 7-52.

Dwight D. Eisenhower Presidential Library. (1956, November 14). *Quotes*. Retrieved from eisenhower.library@nara.gov: http://www.eisenhower.archives.gov/all_about_ike/quotes.html

Fabozzi, F. J., Gupta, F., & Markowitz, H. M. (2002). The legacy of Modern Portfolio Theory. *Journal of Investing*, 11(3) 7-22.

Fiedler, F. E. (1965, September-October). Engineer the job to fit the manager. *Harvard Business Review*, 115-122.

Fleishman, E. A., Harris, E. F., & Burtt, H. E. (1955). *Leadership and supervision in industry: An evaluation of a supervisory training program.* Columbus: Ohio State University Press.

French, J. R., & Raven, B. (1959). The bases of social power. In D. Cartwright, *Studies in Social Power* (pp. 150-167). Oxford, England: United Kingdom: Dorwin Cartwright.

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of Leader-Member Exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *Leadership Quarterly*, 219-247.

Hambleton, R. K., & Gumpert, R. (1982). The validity of Hersey and Blanchard's theory of leader effectiveness. *Group & Organization Management*, *7*(2), 225-242.

Headquarters, Department of the Army. (2014). Army training and leader development. *Army Regulation 350-1*. Washington DC.

Highhouse, S. (2008). Stubborn reliance on intuition and subjectivity in employee selection. *Industrial and Organizational Psychology: Perspectives on science and practice, 1*, 333-342.

Hooper, A., & Potter, J. (1997). *The business of leadership.* Aldershot: Ashgate Publishing Company.

Hunter, S. T., Bedell-Aversb, K. E., & Mumford, M. D. (2007). The typical leadership study: Assumptions, implications, and potential remedies. *The Leadership Quarterly*, 435-446.

Jansen, J., Vera, D. V., & Crossan, M. (2009). Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism. *The Leadership Quarterly*, *20*, 5–18.

Kleinbaum, D., Kupper, L., Nizam, A., & Rosenberg, E. (2013). *Applied regression analysis and other multivariable methods.* Nelson Education.

Landy, F. J., & Conte, J. M. (2013). *Work in the 21st Century, 4th edition.* Hoboken: Jon Wiley & Sons Inc.

Little, A. C. (2014). Facial appearance and leader choice in different contexts: Evidence for task contingent selection based on implicit and learned face-behaviour/face-ability associations. *The Leadership Quarterly, 25*, 865–874.

Lowe, K. B., Kroeck, G. K., & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership : A meta-analytic review of the MLQ literature. *Leadership Quarterly*, *7*(3) 385-425.

Meyer, H., Kay, E., & French, J. (1965). Split roles in performance appraisal. *Harvard Business Review, 43*(1), pp. 123-129.

Mintzberg, H., Kotter, J., Zaleznik, A., Badaracco, J., & Farkas, C. (1998). *Harvard Business Review on Leadership.* Boston: Harvard Business Press.

Nye, C. D., Su, R., Rounds, J., & Dragsow, F. (2012). Vocational interests and performance: A quantitative summary of over 60 years of research. *Perspectives on Psychological Science, 7*(4), 384–403.

O'Donnell, M. E., Taber, T., & Yukl, G. (2009). The influence of leader behaviors on the Leader Member Exchange relationship. *Journal of Managerial Psychology, 24*(4), 289 - 299.

Paulhus, D., & Williams, K. (2002). The dark triad of personality: Narcissism, machiavellianism, and pyschopathy. *Journal of Research in Personality*, *36*(6), 556-563.

Pillemer, J. A., Graham, E. R., & Burke, D. M. (2014). The face says it all: CEOs, gender, and predicting corporate performance. *The Leadership Quarterly, 25*, 855–864.

Pires da Cruz, M. R., Nunes, A. J., & Pinheiro, P. G. (2011). Fiedler's Contingency Theory: Pratical application of the least preferred coworker scale. *The IUP Journal of Organizational Behavior*, *X*(4), 7-26.

Rajan, N. (2009). Leadership. *NHRD Network Journal*, 25.

Rauthmann, J. F., Gallardo-Pujol, D., Guillaume, E. M., Todd, E., Nave, C. S., Sherman, R. A., Funder, D. C. (2014). The situational eight DIAMONDS: A taxonomy of major dimensions of situation characteristics. *Journal of personality and social psychology, 107*(4), 677–718.

Schriesheim, C. A., & Bird, B. J. (1979). Contributions of the Ohio State studies to the field of leadership. *Journal of Management*, *5*(2), 135-145.

Spain, S. M., Harms, P. D., & and Lebreton, J. M. (2013). The dark side of personality at work. *Journal of Organizational Behavior*. John Wiley & Sons, Ltd.

Steele, J. P. (2011). *Center for Army Leadership, Technical Report 2011-3: Antecedents and consequences of toxic leadership in the US Army - A two year review and recommended solutions.* Fort Leavenworth, Kansas: Leadership Research Assessment and Doctrine Division.

The Simon Center for the Professional Military Ethic. (2014). Character Development Strategy. West Point, New York: United States Military Academy.

Trimpop, R. M. (1994). *The Psychology of Risk Taking Behavior.* Amsterdam: Elsevier Science B.V.

Yates, F. J. (1992). *Risk-Taking Behavior.* West Sussex: John Wiley & Sons Ltd.

Yukl, G. (2006). *Leadership in Organizations, 6th Edition.* Upper Saddle River: Pearson Education Inc.

Yukl, G. (2012). Effective leadership behaivor: What we know and what questions need more attention. *Academy of Management Perspectives*, 66-85.

Zaccaro, S. J. (2007). Trait-based perspectives of leadership. *American Psychologist, 62*(1), 6–16.

Appendices

Appendix A: Leader Requirements Model – *Attributes*:

Character List

Army Values: Lives, acts and teaches loyalty, duty, respect, selfless-service, honor, integrity, personal courage

Empathy: Able to see something from another person's point of view; identifies with and enters into another person's feelings and emotions

Warrior Ethos: Shares attitudes and beliefs that embody the spirit of the Army Profession

Discipline: Controls own behavior according to Army values; obeys and enforces good orders practices; does what is morally, legally, and ethically right.

Presence List

Military and Professional Bearing: Projects a commanding presence & professional image of authority.

Physical Fitness: Has sound health, strength, and endurance that supports one's emotional health and conceptual abilities under stress

Confidence: Projects self-confidence and certainty; demonstrates composure and poise; calm and collected; possesses self-control of emotions

Resilience: Shows a tendency to recover quickly from setbacks, shock, adversity, stress or injury while maintain a mission and organizational focus

Intellect List

Mental Agility: Flexible of mind; anticipates or adapts to ever-changing conditions; improvises; able to apply multiple perspectives and approaches

Innovation: Able to introduce new ideas based on opportunity or challenging circumstances; original in thoughts and ideas; creative

Expertise: Possesses facts, beliefs, and logical assumptions in relevant areas; technical, tactical, cultural, and geopolitical knowledge

Sound Judgment: Assesses situations, draws feasible conclusions; makes sound, timely decisions

Interpersonal Tact: Has capacity to understand interactions with others; aware of how others see you and how to interact with them effectively

Note: All attributes and behavioral descriptions in this appendix are listed in ADP 6-22 (2012) and the USMA Periodic Development Reviews.

Appendix B: Leader Requirements Model – *Competencies***:**

Leads List

Leads by Example: Provides the example to others; serves as a role model; maintains high standards in all aspects of behavior and character

Leads Others: Motivates, inspires, and influences others to take initiative, work toward a common goal, and accomplish critical tasks and missions

Builds Trust: Empowers subordinates, encourages initiative, reinforces accountability and allows open communication

Extends Influence Beyond Chain of Command: Influences others outside chain of command; involves indirect means of influence: diplomacy, negotiation, conflict resolution and coordination

Communicates: Clearly expresses ideas to ensure understand, actively listens to others, and employs effective communication

Achieves List

Gets Results: Consistently produces results; develops and executes plans while providing direction, guidance and clear priorities towards mission accomplishment

Develops List

Creates a Positive Environment: Establishes and maintains positive expectations/attitudes to support effective work behaviors, relationships and organization

Prepares Self: Conducts self-study; aware of their limitations and strengths and seek self-development; continues to improve and prepare for leadership roles

Develops Others: Encourages and supports others to grow as individuals and teams; prepares others for success; makes the organization versatile and productive

Steward the Profession: Acts to improve the organization beyond their own tenure and supports developmental opportunities for subordinates

Note: All attributes and behavioral descriptions in this appendix are listed in ADP 6-22 (2012) and the USMA Periodic Development Reviews.

Appendix C: Archival USMA Data – *Descriptive Statistics*

BEHAVIORAL COMPETENCIES & ATTRIBUTES CORRELATION TABLE

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. Army Values	3.09	.93																							
2. Builds Trust	2.61	1.37	.421																						
3. Communicate	2.96	.89	.476	.395																					
4. Confidence	3.01	.86	.479	.392	.552																				
5. Pos Env	3.05	1.04	.480	.535	.470	.450																			
6. Develops Others	2.27	1.36	.387	.635	.383	.382	.464																		
7. Discipline	2.95	.89	.522	.356	.494	.464	.402	.349																	
8. Empathy	2.72	1.18	.384	.506	.425	.404	.492	.468	.330																
9. Expertise	2.65	1.11	.439	.411	.439	.453	.375	.437	.434	.391															
10. Ext Influence	1.81	1.50	.343	.532	.330	.334	.379	.567	.299	.395	.406														
11. Gets Results	2.93	1.02	.493	.460	.516	.490	.454	.440	.501	.399	.395	.390													
12. Innovation	2.40	1.33	.376	.400	.393	.384	.378	.438	.338	.484	.459	.489	.390												
13. IP Tact	2.98	.96	.455	.443	.527	.494	.527	.387	.424	.520	.363	.332	.441	.352											
14. Leads by Ex	2.87	1.10	.517	.482	.439	.456	.524	.519	.529	.425	.447	.403	.515	.400	.441										
15. Leads Others	2.47	1.29	.426	.610	.395	.429	.493	.694	.375	.458	.429	.514	.472	.434	.418	.607									
16. Mental Agility	2.80	1.14	.452	.354	.464	.435	.399	.376	.435	.408	.482	.368	.493	.591	.389	.438	.386								
17. Professional	2.94	.89	.564	.367	.478	.461	.427	.351	.606	.335	.429	.316	.481	.337	.441	.525	.402	.423							
18. Fitness	2.55	1.42	.301	.456	.250	.298	.349	.432	.251	.335	.409	.315	.269	.305	.361	.420	.225	.257							
19. Prepares	2.89	1.04	.455	.381	.475	.436	.379	.372	.509	.362	.477	.363	.506	.419	.399	.479	.388	.493	.284						
20. Resilience	2.62	1.34	.354	.411	.337	.314	.360	.418	.285	.437	.364	.419	.380	.447	.358	.362	.399	.438	.256	.310	.378				
21. Judgement	2.83	1.10	.492	.510	.486	.456	.473	.477	.491	.467	.488	.416	.526	.463	.523	.496	.470	.457	.353	.484	.434				
22. Steward	2.35	1.41	.446	.629	.379	.391	.466	.591	.375	.451	.451	.594	.470	.430	.398	.486	.550	.376	.405	.449	.396	.507			
23. Ethos	2.75	1.18	.530	.511	.397	.444	.445	.487	.416	.460	.441	.438	.410	.410	.489	.497	.394	.433	.445	.406	.441	.514	.553		
24. Overall Rating	**2.35**	**.515**	**.342**	**.230**	**.357**	**.347**	**.274**	**.233**	**.396**	**.240**	**.301**	**.198**	**.386**	**.251**	**.303**	**.362**	**.273**	**.320**	**.385**	**.150**	**.349**	**.180**	**.315**	**.238**	**.260**

All Correlations is significant at the 0.01 level

Appendix D: Leader Profile Descriptions

LEADER PROFILE 1: This leader shows discipline, communicates effectively, and gets results while projecting confidence and a military professional bearing. <u>Detailed Description:</u> A leader with this profile consistently produces desired results, develops and executes plans while providing direction, guidance, and clear priorities towards mission accomplishment. This leader also shows the discipline required to control his/her own behavior according to organizational values; obeys and enforces good order and practices; and does what is ethically right. He/she communicates clearly and employs effective techniques when expressing ideas. Finally, this leader projects confidence and certainty while demonstrating composure and poise; acts calm and collected, shows self-control of emotions; and projects a commanding presence and professional image.

LEADER PROFILE 2: This leader creates a positive environment; develops and leads others; shows empathy and innovation. <u>Detailed Description:</u> A leader with this profile establishes and maintains positive expectations and attitudes that support effective work behaviors, relationships, and the organization; develops individuals and teams through encouragement and support; and prepares others for success and makes the organization versatile and productive. This leader also motivates, inspires, and influences others to take initiative, work toward a common goal, and accomplish critical tasks and missions. Finally, this leader can see something from another person's point of view; identifies with and enters into another person's feelings and emotions; and introduces new and creative ideas based on opportunity or challenging circumstances.

LEADER PROFILE 3: This leader displays physical fitness and resilience, stewards the profession, builds trust, and extends influence beyond his/her chain of command. <u>Detailed Description:</u> A leader with this profile shows the health, strength, and endurance that support one's emotional health and conceptual abilities under stress. Influences others outside the chain of command; uses indirect means of influence: diplomacy, negotiation, conflict, resolution, and coordination. He/she also shows a tendency to recover quickly from setbacks, shock, adversity, stress or injury while maintaining a mission and organizational focus. This leader acts to improve the organization and support developmental opportunities. Finally, he/she empowers subordinates, encourages initiative, reinforces accountability and allows open communication.

Appendix E: Profile Rank Order Results

	Ranking Frequency			Descriptive Statistics	
	Ranked 1st	**Ranked 2nd**	**Ranked 3rd**	**Mean**	**SD**
Profile 1	126	75	54	1.72	0.79
Profile 2	70	86	99	2.11	0.81
Profile 3	59	94	102	2.17	0.78

Appendix F: Behavioral Statements – *Rated by ROTC Respondents*

Behaviors (High r, low s²)	Behavioral Statement/Description
Values	Lives, acts, and teaches loyalty, duty, respect, selfless-service, honor, integrity, personal courage
Gets Results	Consistently produces results, develops and executes plans while providing direction, guidance, and clear priorities towards mission accomplishment
Communicate	Clearly expresses ideas to ensure understanding, actively listens to others, and employs effective communication techniques
Discipline	Controls own behavior according to organizational values; obeys and enforces good orders practices; and does what is morally, legally, and ethically right
Confidence	Shows self-confidence and certainty, demonstrates composure and poise; acts calm and collected; shows self-control of emotions
Military and Professional Bearing	Projects a commanding presence and a professional image

Behaviors (low r, high s²)	Behavioral Statement/Description
Builds Trust	Empowers subordinates, encourages initiative, reinforces accountability and allows open communication
Resilience	Shows a tendency to recover quickly from setbacks, shock, adversity, stress or injury while maintaining a mission and organizational focus
Stewards the Profession	Acts to improve the organization beyond their own tenure and supports developmental opportunities for subordinates Projects a commanding presence and a professional image
Innovation	Introduces new and creative ideas based on opportunity or challenging circumstances; creates original in thoughts and ideas
Extends Influence	Influences others outside the chain of command; uses indirect means of influence: diplomacy, negotiation, conflict, resolution, and coordination
Physical Fitness	Shows sound health, strength, endurance that supports one's emotional health and conceptual abilities under stress

Appendix G: Behavioral Statements – *Rank Order Results*

Rank Order Results for Survey Prompt 1

Prompt 1: I would MOST LIKELY prefer to work with a leader that…

	RANK FREQUENCY				RANK STATISTICS	
BEHAVIOR GROUP 1	*#1*	*#2*	*#3*	*#4*	*MEAN*	*SD*
Values	300	157	108	86	1.97	1.08
Gets Results	292	160	110	89	1.99	1.08
Communicates	210	201	142	98	2.20	1.05
Discipline	156	172	163	160	2.50	1.11
Confidence	134	191	192	134	2.50	1.04
Military & Professional Bearing	81	134	179	257	2.94	1.05
BEHAVIOR GROUP 2						
Builds Trust	216	196	142	97	2.18	1.06
Resilience	150	223	177	101	2.35	1.00
Stewards the Profession	144	185	180	142	2.49	1.06
Innovation	107	122	194	228	2.83	1.08
Extends Influence	85	108	186	272	2.99	1.05
Fitness	78	104	180	289	3.04	1.04

Rank Order Results for Survey Prompt 2

Prompt 2: The following behaviors are MOST effective for junior leaders to employ:

	RANK FREQUENCY				RANK STATISTICS	
BEHAVIOR GROUP 1	*#1*	*#2*	*#3*	*#4*	*MEAN*	*SD*
Values	255	160	129	107	2.14	1.11
Gets Results	244	173	131	103	2.14	1.09
Communicates	286	189	109	67	1.93	1.01
Discipline	192	179	161	119	2.32	1.08
Confidence	174	182	172	123	2.37	1.07
Military & Professional Bearing	112	123	171	245	2.84	1.11
BEHAVIOR GROUP 2						
Builds Trust	189	197	144	121	2.30	1.08
Resilience	145	217	193	96	2.37	0.99
Stewards the Profession	118	170	205	158	2.62	1.04
Innovation	86	132	148	285	2.97	1.08
Extends Influence	83	126	204	238	2.92	1.03
Fitness	69	105	186	291	3.07	1.01

Total Rank Order Results for Survey Prompts 1 & 2

	RANK FREQUENCY				RANK STATISTICS	
BEHAVIOR GROUP 1	*#1*	*#2*	*#3*	*#4*	*MEAN*	*SD*
Values	555	317	237	193	2.05	1.09
Gets Results	536	333	241	192	2.07	1.09
Communicates	496	390	251	165	2.07	1.03
Discipline	348	351	324	279	2.41	1.09
Confidence	308	373	364	257	2.44	1.05
Military & Professional Bearing	193	257	350	502	2.89	1.08
BEHAVIOR GROUP 2						
Builds Trust	405	393	286	218	2.24	1.07
Resilience	295	440	370	197	2.36	0.99
Stewards the Profession	262	355	385	300	2.56	1.05
Innovation	193	254	342	513	2.90	1.08
Extends Influence	168	234	390	510	2.95	1.04
Fitness	147	209	366	580	3.06	1.03

Appendix H: ROTC Participant Recruitment Flyer

Appendix I: Institutional Review Boards Approval Letter – *Page 1*

USF
UNIVERSITY OF
SOUTH FLORIDA

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

March 16, 2016

Matthew Arbogast
Psychology
4202 E. Fowler Avenue
Tampa, FL 33620

RE: **Exempt Certification**
IRB#:   Pro00025189
Title: Leader Behavior Portfolios

Dear Mr. Arbogast:

On 3/15/2016, the Institutional Review Board (IRB) determined that your research meets criteria for exemption from the federal regulations as outlined by 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Approved Items:

Study Protocol for Leader Behavior Portfolios version 1 (12 MAR 16).docx

Online Consent Form version 1 (14 MAR).docx

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF HRPP policies and procedures.

Please note, as per USF HRPP Policy, once the Exempt determination is made, the application is closed in ARC. Any proposed or anticipated changes to the study design that was previously declared exempt from IRB review must be submitted to the IRB as a new study prior to initiation

Appendix I: Institutional Review Boards Approval Letter – *Page 2*

of the change. However, administrative changes, including changes in research personnel, do not warrant an amendment or new application.

Given the determination of exemption, this application is being closed in ARC. This does not limit your ability to conduct your research project.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

Kristen Salomon, Ph.D., Vice Chairperson
USF Institutional Review Board