

LEADERSHIP CHARACTERISTICS OF PROTECTIVE FORCE INSTRUCTORS

by

Justen D. Parker

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

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Abstract

The National Nuclear Security Administration, the governmental agency responsible for safeguarding and security the United States' nuclear weapons production and research facilities, employs an armed protective force that responds to the full spectrum of threats. Governmental reports previously identified protective force performance in need of improvement. The purpose of this quantitative study, through the use of correlational research, is to identify the beneficial leadership characteristics of instructors, from the full range of leadership model, that enhance training and increase officer performance during training and improve mission performance. The Multifactor Leadership Questionnaire (MLQ) was used to identify instructor leadership characteristics and student outcomes. Consistent with previous research results, transformational leadership had a stronger significant positive relationship with student outcomes than transactional and passive-avoidant leadership.

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Dedication

I would like to dedicate this project to my Lord and Savior, Jesus Christ for His love and grace, without which this would all be for not. I would also like to dedicate this project to my wonderful sons, Westen and Carson, for they are the people that had to sacrifice their time also, while this project and the entire doctoral program were completed. I love you boys with all of my heart and soul.

For my parents and family, you have somehow managed to get me to fall in love with learning, despite my best efforts, and I am so thankful. You have always set the right example and challenged me to be better than I am, to never settle for second best. I love you all so very much!

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I have carefully reviewed this study to ensure no detail included any information that could be considered sensitive or for official use only. The National Nuclear Security Administration classification office also reviewed this study prior to publication.

Lastly, Ms. Denise Pera, my mother's life-long friend and my English teacher. You never let me slack, you taught me how to write, and you never settled for mediocrity. For you, my dear, I made it!

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Section 1: Foundation of the Study

This research examined the leadership qualities of the National Nuclear Security Administration's (NNSA) full-time protective force instructors. The components included in the full range of leadership model were used as a basis for the project to include transformational, transactional, and passive-avoidant styles of leadership. The leadership characteristics used by instructors in NNSA were not known and research on this topic, within this environment, had not been conducted previously. However, earlier research had been conducted on how transformational leadership impacts students within a university setting (Bolkan & Goodboy, 2009; Eliophotou, 2014; Pounder, 2003, 2008, 2009, 2014; Ruddell, 2008). Most of those studies confirmed that transformational leadership is predictive of better student performance when compared to transactional and passive-avoidant leadership. This study examined the NNSA's protective force training instructor leadership characteristics and compared the results with previous studies.

Background of the Problem

The Department of Energy (DOE) has many responsibilities within the United States of America. One specific responsibility that is inherently governmental work is the manufacturing, refurbishment, and maintenance of nuclear weapons and special nuclear material. The NNSA is the organization within DOE that is responsible for ensuring the nation's nuclear weapons are safe, secure, and effective. While the possession of nuclear weapons is a controversial topic, the weapons and material still exist within the nation's borders and must be secured. The end user of the weapons is the military, and the military has the ability to protect those weapons. However,

when being refurbished or generally maintained, the weapons and materials are the responsibility of NNSA. As such, NNSA has deployed a security force that must be capable of responding to the full range of threats to protect the nation's deadliest weapons and material.

NNSA has eight main sites across the country and each are government owned, contractor operated. Each government owned facility awards an operating contract to a company to manage the facility, perform the work, and, in most cases, execute the safeguards and security mission. Some facilities award a prime contract directly to one company for the performance of the safeguard and security mission. Regardless of the contract model, protective forces at each site are organized in similar fashion. Senior managers oversee the entire armed security mission that includes protective force operations, training departments, and performance testing organizations. Originally, in the 1950's and 1960's, protective forces were structured in a manner similar to police departments. Protective force personnel, security police officers (SPOs), operated as single elements in those days to protect the facility and control access to sensitive areas. Personnel in charge of the rank and file protective force officer were seen simply as supervisors. They were concerned with time sheet completion, staffing posts, and ensuring their subordinates were compliant with rules and regulations.

Like most police departments, each site constructed a live fire range so armed guards could practice shooting weapons and complete qualification courses of fire. Full-time firearms instructors were assigned to those ranges to facilitate weapons training and practice. This organizational design approach is still used today. However, the protective force mission has evolved over the years and has taken on more of a paramilitary focus (Gibbs, 2015).

Today, protective forces operate more in teams and less in an individual capacity, especially at larger facilities (Gibbs, 2015). Supervisors are now beginning to take on the role of leader. This transition is necessary to improve protective force capabilities and combat the threat of terrorism that has grown in of occurrences and deaths from 2000 to 2014 (Institute for Economics & Peace, 2016). However, training organizations remain largely unchanged from their initial design.

In order to maintain a capable and effective protective force, DOE Order 473.3A, *Protection Program Operations* (U.S. Department of Energy, 2016) requires individuals and teams to attend training multiple times throughout the year in order to remain qualified and certified. Full-time protective force instructors, not leaders, provide recurring training, which includes classroom instruction, weapon marksmanship, team tactical exercises, and force-on-force simulated battles designed to maintain a protective force, comprised of individuals, leaders, and teams, capable of mission accomplishment. Instead of focusing solely on individual skills and proficiency, today's training is more demanding and team oriented (Gibbs, 2015).

In military organizations, unit training and performance is the responsibility of the leader, not an instructor, which is done for several reasons, according to Army Doctrine Publication 7-0, *Training Units and Developing Leaders* (United States, 2012). First, it provides the leader an opportunity to structure training events based on the needs of the unit, which ensures training resources are used effectively for mission improvement. Second, it builds confidence in the leader as the subject matter expert during the training event. Third, it provides the leader a chance to assess subordinate performance so that future decisions can take individual and team capabilities into consideration. "Training should also be structured to grow problem solving,

increase intangibles (adaptability, confidence, accountability, responsibility, and initiative), increase understanding and awareness, increase deliberate thought, and improve mission performance” (McEnery, 2015, p. 7).

Therefore, since instructors are responsible for conducting off-post training at a live fire range, it was necessary to explore the role of the instructor. Within the current organizational design, instructors are the leaders during training. With that in mind, the instructor should be able to tailor training to the needs of the unit; the instructor should be seen as the subject matter expert; and the instructor should assess the performance of the individual and teams in training.

Despite the best efforts of the researcher, no previous research was found to exist that was conducted on either the leadership characteristics and styles of full-time protective force training instructors or the impact these leadership characteristics had on student performance and outcomes during practical training exercises. Training is based on a needs analysis for mission accomplishment and if training does not improve performance and generate the desired outcomes, then mission accomplishment suffers. From a leadership perspective, instructors may have used, or focused on, different leadership characteristics while conducting training, which could have affected student performance. Since leadership characteristics were found to significantly affect training outcomes, then it may be beneficial to provide site instructors with a training intervention that focuses on improving leadership skills identified within the project.

Problem Statement

Substandard protective force performance has been documented in several reports (U. S. Department of Energy [DOE], 2005, 2010) and was manifested during an actual incursion by three personnel into the Y-12 National Security Complex in July 2012 (“DOE’s Nuclear

Weapons Complex,” 2012; DOE, 2012). Specifically, in 2004, tactical skills were in need of improvement based on an inspection by DOE’s Office of Independent Oversight and Performance Assurance (DOE, 2005, p. 3). Although the site improved performance in this area, the deficiency of tactical skills still remained evident during the breach of Y-12 in 2012. In a hearing before the Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, U. S. House of Representatives, one senior DOE official stated there was a “delayed and inept response” (“DOE’s Nuclear Weapons Complex,” 2012, p. 47) and “the response of the first responder was less than adequate” (p. 62). See above – direct quotes should be used sparingly at doctorate level and only when the text cannot be summarized or paraphrased without a loss of meaning. The problem that was addressed in the current research is that training is not effective in producing the real-world performance that is expected and required by federal law, specifically Title 10 Code of Federal Regulations, Section 1046. Identification of current leadership characteristics of protective force instructors who fulfill the role of leader during off-post training, has partly explained why mission performance has not been as effective as possible in the past.

Purpose Statement

The purpose of this quantitative study, through the use of correlational research, was to examine the relationship between leadership characteristics of instructors, from the full range of leadership model (Bass, 1985), and student outcomes. Identification of instructor leadership characteristics that are positively correlated with student outcomes could enhance training and improve mission performance. This was the first step to understanding leadership within NNSA protective force organizations and protective force instructors. No other scholarly research has

been conducted on this topic, within this organization and this study could lead to other future studies. The results were consistent with research on the full range of leadership model conducted in classrooms (Pounder, 2014), within military organizations (Bass, 1996), and in police organizations (Indrayanto, Burgess, Dayaram, & Noermijati, 2014).

Furthermore, the results of this study showed a significant correlation between leadership characteristics and outcomes, therefore, recommendations for interventions were offered. An intervention conducted in a formal training environment or through self-training has been found to be effective in growing leadership characteristics (Fitzgerald & Schutte, 2010) and was recommended for NNSA. Changes in the culture of the organization (e.g., presenting the study to senior contractor and federal personnel) were also recommended based on the results of this study.

Nature of the Study

Within a study, the researcher is required to determine or select a research methodology and a design that is best suited for explaining and understanding the research problem. It was important to begin this research with a clear understanding of the method and design in order to facilitate data collection and interpretation. Without clearly defining a method and design at the early stages of the research, the project would not have yielded the information needed to address the research question.

Research Methods

Three types of research methods are available for scholarly research. These methods are quantitative, qualitative, and mixed method, which is a combination of quantitative and qualitative research. This section contains a discussion of each, supported by literature, to

substantiate the reasoning behind the selection of one methodology above the others.

The justification includes information from literature explaining the appropriateness for the specific selection. Additionally, quantitative and qualitative research may contain some aspects of the other in order to better explain the collected data or observations (Creswell, 2014).

Quantitative method. A quantitative method is useful when studying a large population and only a portion of the population may be accessed for sampling (Creswell, 2014).

Quantitative research requires one or more hypothesis or hypotheses and a null hypothesis or hypotheses, which are examined using collected statistical data. Typically, data collection methods include the use of surveys, questionnaires, test scores, or other numerical data, but may also be experimental (Creswell, 2014). Collected data is then analyzed using certain statistical methods to determine correlations and/or relationships between independent variables, dependent variables, or among combinations of multiple variables. The degree to which variables correlate or affect one another may also be shown using this method.

In order to determine the leadership qualities of protective force instructors, a quantitative methodology was used. Specifically, quantitative research using surveys or questionnaires are used when it is necessary to account for differences within a sample or measure the distribution of responses in terms of percentages on somewhat subjective (Rowley, 2014). This methodology also followed the framework of previous research conducted in this field (Arnold & Loughlin, 2013; Bolkan & Goodboy, 2009; Pounder, 2009). Since the purpose of this research was to identify leadership characteristics that influence SPO outcomes and understand the best predictors of SPO outcomes, quantitative research was used (Creswell, 2014).

Qualitative method. This approach to research involves observations of human behavior in order to better understand and explain why something occurs (Creswell, 2014). This method requires the researcher to interpret what is seen during observations. The interpretation is also based on personal experiences of the researcher and information provided through previous research, yet it is situational also (Stake, 2010). The use of observations and interviews are typically used to collect information or data that is then examined to learn more about the problem and purpose of the research. Qualitative research was not appropriate in relation to the problem identified because narrative research related to personal experiences would not provide a large enough sample of the population to truly understand and quantify the leadership characteristics of instructors. Therefore, this method was not selected.

Mixed methods. This methodology is a combination of quantitative and qualitative research, as described previously in this section. At the conclusion of data collection for both methods, the researcher uses the data from both designs to enhance understanding of the problem for which the research is based (Creswell, 2014). This method requires the researcher to follow the general guidelines for both quantitative and qualitative research and should not be confused with using, for example, general observations made during administration of surveys or questionnaires when using a quantitative methodology. Since qualitative research would not provide ample data for the problem, the mixed method approach was not selected for this project either.

Research Design

There are several research designs primarily used for quantitative research.

They include correlational, experimental, quasi-experimental, and descriptive. Each design is better suited for certain research methodologies based on the problem of the research (Creswell, 2014).

Descriptive. A descriptive design attempts to describe a phenomenon or occurrence through the use of data collection tools such as surveys and/or observations. None of the data is manipulated; it is simply used to better describe the problem (Chudleigh & Smith, 2015). For the purposes of this research, the variables were already identified and described; therefore, this design was not appropriate.

Correlational. Correlational research provides a description of the variables using numeric values by studying a sample of a population (Creswell, 2014). This design typically uses a survey tool to gather data from a sample of the population and in this case, was focused on leadership characteristics of protective force instructors. Also, this project examined the relationship between leadership characteristics within the full range of leadership model and outcome variables of extra effort, perceptions of instructor effectiveness, and satisfaction with the instructor. These outcome variables have been studied and found to mediate student performance (Chi & Pan, 2012; Mohammed, Fernando, & Caputi, 2013; Pounder, 2009). Practical training exercises on tasks identified within NNSA's Enterprise Mission Essential Task List (EMETL) served as the conditions set for the survey. EMETL is a list of individual, leader, and collective tasks required to accomplish the protective force mission (National Nuclear Security Administration [NNSA], 2014). Research on the full range of leadership model has been conducted and supports the descriptions of the characteristics originally identified by Bass

(1985) in the model of this study. Since this has been completed in other situations, it seemed appropriate to conduct similar correlational research within the NNSA.

Experimental. An experimental design is used to detect a change in dependent variables by varying independent variables (Creswell, 2014). This approach requires additional time to establish a baseline relationship between or among the independent and dependent variables. Once this has been determined, changes to independent variables may be used to determine changes in outcomes or dependent variables. For this research, a baseline relationship among independent and dependent variables must have first been established, but was not. Therefore, an experimental design was not used.

Quasi-experimental. This design is much like an experimental design; however, the participants are not truly randomly selected or assigned (Creswell, 2014). While the participants in this research project were conveniently selected, due to the training roster for each day that is created by each site's leadership, an experimental approach still remained inappropriate because no baseline values for independent or dependent variables were previously established. With this in mind, a quasi-experimental design was not used for this research.

Research Questions

An examination of correlations among the constructs and factors of the full range of leadership model and student outcomes was conducted. The questions of directional relationships among these various factors were the focus of this research and, therefore, were the foundation of the questions to be answered. Are leadership constructs (i.e., transformational, transactional, and passive-avoidant) and factors (e.g., inspirational motivation, contingent

reward, and laissez-faire), which are independent variables from the full range of leadership model, positively related to student outcomes (dependent variables)?

Prior to conducting the research, it was posited that there would be a positive correlation between the transformational leadership construct and student outcome factors. This relationship was presumed to be stronger than that of the transactional construct with student outcome factors, while the passive-avoidant factor was presumed to display a negative correlation with student outcomes.

This research also provided insight into the leadership characteristics exemplified by protective force instructors during off-post, tactical training. Additionally, this research attempted to determine which leadership characteristics affect student outcomes more than others, and which leadership characteristics negatively influence student outcomes. Based on previous research, through a review of current literature, this approach for this project provided answers to the following questions:

*RQ*₁: Are transformational leadership characteristics positively correlated with student outcomes?

*RQ*₂: Are transactional leadership characteristics positively correlated with student outcomes?

*RQ*₃: Is passive-avoidant leadership negatively correlated with student outcomes?

Hypotheses

*H*₀₁: There is no statistically significant positive correlation between transformational leadership factors of protective force instructors and student outcomes.

*H*_{a1}: There is a statistically significant positive correlation between transformational leadership factors of protective force instructors and student outcomes.

*H*₀₂: There is no statistically significant positive correlation between transactional leadership factors of protective force instructors and student outcomes.

*H*_{a2}: There is a statistically significant positive correlation between transactional leadership factors of protective force instructors and student outcomes.

*H*₀₃: There is no statistically significant negative correlation between passive-avoidant leadership of protective force instructors and student outcomes.

*H*_{a3}: There is a statistically significant negative correlation between passive-avoidant leadership of protective force instructors and student outcomes.

Theoretical Framework

The full range of leadership model presented by Bass and Riggio (2006) contains elements of transformational leadership, transactional leadership, and laissez-faire behavior. The aim of this project was to determine the relationship this model had with leadership outcomes, which were measured in terms of student extra effort, perceptions of instructor effectiveness, and satisfaction with the instructor (Pounder, 2009). Tsai and Lin (2012) found transformational leadership characteristics, when employed in a classroom, to have a positive benefit on student performance. Transactional leadership, which includes contingent reward and management-by-exception has also been found to have a positive relationship with performance, yet not every organizational structure can benefit significantly from such an approach (Schweitzer, 2014). Furthermore, Washington, Sutton, and Sauser (2014) identified negative impacts of performance as a result of laissez-faire leadership, or the lack of leadership.

Instructors possessed varying magnitudes and combinations of the elements of this model when providing instruction to SPOs within the protective force ranks. However, it should be stated that not all instructors demonstrated all the behaviors within this model during a given training evolution. The magnitude of each element was examined in an attempt to ascertain the influence each had on the various leadership outcomes. Instructors that demonstrated more transformational leadership qualities were more likely to produce better-trained SPOs, mediated by the leadership outcomes. This has been demonstrated in earlier similar studies conducted by Bolkan and Goodboy (2009), Pounder (2008), and Walumbwa, Wu, and Ojode (2004).

Definition of Terms

Contingent reward (CR): This is an exchange between a leader and a follower that rewards good performance/behavior or disciplines poor performance/behavior (Schiena, Letens, VanAken, & Farris, 2013).

Full range of leadership model (FRLM): This model encompasses a complete inspection of leadership characteristics of leaders. This model includes transformational leadership, transactional leadership, and passive-avoidant leadership (Avolio & Bass, 2004).

Individualized consideration (IC): The amount each leader meets the needs of each follower and treats each follower as an individual. The leader also acts as a coach or mentor and understands issues from the individual's perspective (Bacha, 2014).

Idealized influence (II): The leader is a role model to followers through actions (behavior) and perception (attributed) (Zacher, Pearce, Rooney, & McKenna, 2014).

Inspirational motivation (IM): Leaders inspire followers with a captivating vision of the future and provide work that is challenging and meaningful (Zwingmann et al., 2014).

Intellectual stimulation (IS): The leader challenges the follower to discover new approaches to solving problems and fosters creative thinking (Kendrick, 2011).

Laissez-faire leadership: This is the absence of leadership and the leader is indifferent to tasks and follower needs (Overbey, 2013).

Leadership outcomes: The result of leadership characteristics that affect extra effort, perceptions of leader (instructor) effectiveness, and satisfaction with the leader (instructor) (Pounder, 2009).

Management-by-exception active (MBEA): The leader monitors the work performed by followers for errors, mistakes, and/or deviations from standards. The leader implements corrective actions when necessary (Mesu, Maarten, & Sanders, 2013).

Management-by-exception passive (MBEP): Leaders do not intervene in operations until follower behavior and/or actions create a problem. At that time, the leader implements corrective actions to address deviations from standards (Washington, Sutton, & Sauser, 2014).

Training evolution: One or more training exercises, typically practical, conducted with one or more SPOs.

Transformational leadership: An approach by which the leader motivates and inspires followers to achieve more than he or she thought was possible (Burns, 1978).

Transactional leadership: This is the relationship between the leader and the follower that focuses on exchange from one to the other. It is directive in nature, mainly from the leader's position. The follower is typically rewarded for meeting expectations (Eliophotou, 2014).

Student outcomes: The result of leadership characteristics that affect extra effort, perceptions of leader (instructor) effectiveness, and satisfaction with the leader (instructor) (Pounder, 2009).

Assumptions, Limitations, and Delimitations

Assumptions

The Multifactor Leadership Questionnaire (MLQ) was used to gather data on leadership characteristics of protective force instructors with regard to the full range of leadership model. However, the MLQ, Form 5X, was designed for full time leaders or managers. Modifications to the MLQ were necessary to change the context from a leader or manager to an instructor. It was assumed that each question could be modified in a manner that maintained the validity and reliability of the instrument so data comparisons against previous research could be conducted. To mitigate discrepancies within the MLQ, subject matter experts from Mindgarden, the company that owns the rights to the MLQ, reviewed each modified question to ensure responses remain aligned with data previously recorded. However, Mindgarden did not approve the use of modified items. Instead, based on recommendations from Mindgarden, the modified items were completed by SPOs after completion of the original MLQ.

Off-post tactical training exercises required participation by several instructors simultaneously, since tactical, off-post training exercises are a team effort performed by SPOs

and overseen by instructor cadre. Not every instructor was guaranteed to interact with each student during the exercises. Therefore, each student completed the MLQ based on the aggregate of instructors for that particular training day in order to minimize cost yet still capture necessary data. The data collected remained consistent but anecdotal evidence was gathered to better explain SPO and instructor scores from the MLQ in order to maintain consistency among scores from each site.

A specific record of activities conducted during each training day was created. The information on this spreadsheet tracked the number of SPOs, the number of instructors, the activities performed, the duration of each activity, and comments associated with each activity. This information, coupled with notes from observations helped understand the results during each training day and results among the various sites, which also helped to mitigate risks associated with variances in data.

The results provided managers and executives of protective force contracts with the leadership characteristics each protective force instructor possesses, and how these characteristics affect mission performance. The results also helped identify leadership qualities necessary for leaders to demonstrate when conducting training with subordinates on-post, during the execution of the security mission.

Limitations

Perceptions of leadership come from the perspective of the student, instructor, and the instructor's leader/supervisor (Avolio & Bass, 2004). However, peer evaluations and management evaluations were not included as part of this study. Also, assessments of student overall performance and improvement during the training evolution was not examined even

though the EMETL program provides specific guidelines for assessing performance.

Since previous performance data on each individual and team was not readily available, nor could they have been reasonably collected, actual performance was not measured. Lastly, participants completed the MLQ based on the training conducted for that specific day, based on the collective/aggregated set of instructors. Data collection observations, anecdotal notes, time available for questionnaire completions, and differences in individual instructor interaction with specific SPOs required this approach.

Delimitations

This study focused on instructor leadership characteristics and the resulting student performance. Transformational leadership is applicable to all cultures and organizations (e.g., military, schools, public entities, and private firms (Ruddell, 2008). Other factors such as site locations, contract models, instructor compensation, and training documentation was not reviewed. However, student demographics, experience, and job history was reviewed to determine if these factors correlate to performance or perceptions of leadership of instructors. Additionally, the selection of the sample at each site was left to the protective force manager responsible for assigning jobs and duties for each day. Since attempting to influence this could potentially cause increases in costs and threaten the company-union relationship, the researcher simply collected data from the SPOs that participated in training each day. This type of sampling, convenience, also resulted in a sample size smaller than desirable, which was required to achieve an allowable margin of error.

Significance of the Study

Reduction of Gaps

Current literature focused on military, police, classroom, and business environments. However, a study conducted within the DOE's NNSA with regard to off-post protective force training had not yet been completed. Gaining more understanding of the effects of instructor leadership characteristics within the full range of leadership model could aid other researchers to determine options to use the same approach in other venues, and within other industries, in order to achieve increased student (subordinate) outcomes. For example, Garger and Jacques (2008) found a gap in the literature in the context of examining instructors as leaders and subsequently examined instructor intellectual stimulation and individualized consideration.

The results of this research project provided the DOE with the knowledge of the relationships among leadership characteristics and student outcomes. Leadership characteristics that positively correlate with student outcomes are important for protective force instructors to possess in order to provide the best training possible to protective force members and ultimately improve performance during real-world events. The requirements for SPOs to make split-second, life or death decisions are the factors that make training in NNSA different from other business training organizations. Additionally, the results of non-action or substandard tactical performance could prove catastrophic and negatively impact the United States and the rest of the world.

The Government Accountability Office (GAO, 2010) reports that the NNSA spends approximately \$20m per year on protective force training and that maximizing the return on investment could be substantial. However, throughout the rest of the country, training costs

reach \$100 billion annually (Hutchins, 2009). The results of this current research may also be used to help field supervisors (leaders) improve the training provided to subordinates while on duty during routine operations by increasing leadership behaviors that were found to positively correlate with student outcomes.

Implications for Biblical Integration

Jesus is the perfect example of a transformational leader. He wanted to bring the world his insight and knowledge of how God wants us all to act. He wanted us to transform from our old ways and transcend to a higher level of life. He is also the best teacher. This project was focused on examining the leadership characteristics of trainers and therefore used Jesus and Scripture as a benchmark for comparison. Jesus was a teacher and was called that by His followers and even his enemies (Matthew 22:16, 24, NKJV). He was committed to teaching the Word of God so that people could live the life God desired. He could teach to individuals, small groups like His disciples, and also to the masses as evidenced by the Sermon on the Mount. So, by understanding that Jesus is a teacher, it is logical to examine His behavior to create a baseline of the leadership characteristics used by the best teacher ever.

Jesus is a servant leader. He is committed to serving others and helping them grow in the Word of God. He understands that by teaching people they became more capable of making better decisions and living the life God desires for them. He also understood that to live that life, people would face adversities and struggles along the way, but because He served as their teacher/instructor, the people would be able to meet any challenge and triumph.

Relationship to Field of Study

Literature that focused on leadership characteristics of teachers has been limited to a classroom setting based on the studies completed by Bolkan and Goodboy (2009), Fredendall, Robbins, and Moore (2001), Pounder (2003, 2009), Ruddell, (2008), Tsai and Lin, (2012), and Walumbwa et al., (2004). This research project expanded on the base knowledge of the full range of leadership model and examined the characteristics necessary to improve student performance during a training evolution in a military, paramilitary, or police environment (Bass, 1996; Hedlund & Österberg, 2013; Indrayanto et al., 2014).

A Review of the Professional and Academic Literature

In present day literature, there are many models, theories, and descriptions of leadership. Some examples of leadership theories include situational theory, personal-situational theories, leader-role theory, Fiedler's contingency theory, exchange theories, behavioral theories, and communication theories (Landis, Hill, & Harvey, 2014). Shared leadership, transformational leadership, authentic leadership, and servant leadership are also current theories used to define leadership in research today (Barnes, Humphreys, Oyler, Pane Haden, & Novicevic, 2013). However, a broader more holistic view of leadership was needed to better define the entire leadership spectrum.

After reviewing the literature, there appeared to be a linkage between transformational leadership and higher levels of performance. Understanding the full range of leadership model, outcome variables, and application to the classroom was necessary to follow the logical transition from beginning to end. Using the Multifactor Leadership Questionnaire (MLQ) and modifying some of the items in the MLQ also aided in examining current instructor leadership

characteristics. Additionally, work engagement, subordinate learning, academic performance, effects on students, and learning outcomes all lead to building the foundation for improved performance. This literature review follows the roadmap just presented and explains, in detail, each item.

A review of current literature has identified the full range of leadership model (Bass, 1985) as a complete view of leadership. This model includes transformational, transactional, and passive-avoidant leadership. These characteristics influence employee/student extra effort, satisfaction with the leader/instructor, and perceived effectiveness of the leader/instructor. Also, these characteristics impact work engagement, which includes the need for autonomy, competence, and relatedness. Pounder (2008) also found applicability of this leadership model in the classroom and examined the results on subordinate learning. Academic performance was also found to be influenced by transformational leadership during the review of literature. More specifically, student effort, motivation, participation, and empowerment were examined and shown to improve student performance.

The Full Range of Leadership Model

The full range of leadership model was created by Bernard Bass (1985) and includes portions of transformational, transactional, and passive-avoidant behavior. This concept provided the framework for defining the overall spectrum of leadership, from the most effective to the least effective and was the foundation for examination into leadership characteristics within any organization. It should be noted that individuals may display all characteristics, with varying degrees, within this model while serving in a leadership role. The characteristic displayed is based on the situation and the individual. For example, some spectacular leaders

may, in fact, fail to respond to an urgent question by subordinates, which would be categorized as laissez-faire. However, the degree or frequency by which each characteristic is measured could indicate an extremely low amount of laissez-faire behaviors.

Studies have been conducted in the classroom (Bolkan & Goodboy, 2009; Pounder, 2003, 2009; Tsai & Lin, 2012; Walumbwa, Wu, & Ojode, 2004), with military units (Arthur & Hardy, 2014; Bass, 1996; Bass, Avolio, Jung, & Berson, 2003; Hedlund & Österberg, 2013; Schiena et al., 2013), police organizations (Indrayanto et al., 2014), and businesses (Bacha, 2014; Mesu et al., 2013) around the world. Within this model are several components, according to Bass and Riggio (2006). Moving along a spectrum from transformation, through transactional, and into passive-avoidant are the following: idealized influence (attributed and behavior), inspirational motivation, intellectual stimulation, individualized consideration, contingent reward, management-by-exception, and laissez-faire (Bass & Riggio, 2006).

Transformational leadership. Transformational leadership is a process that connects people, increases commitment, and drives others to achieve a vision of the future that is communicated by the leader (Northouse, 2013), which was first introduced by Burns (1978). This is a proactive approach that enhances the performance of the follower. Transformational leadership, however, is not mutually exclusive of transactional leadership (Bass et al., 2014), which deals with exchanges between the leader and the follower through either a contingent reward approach (positive performance is rewarded) or through management-by-exception (negative performance is punished).

Transformational leadership changes people and organizations (Northouse, 2013). This is the prime reason why transformational leadership appears to be linked to instructors and

trainers, the mission of which is to change the behaviors of individuals by either enhancing or adding new knowledge, skills, and/or abilities. Transformational leaders, or in this case transformational instructors, stimulate deliberate thought in followers to examine problems from a novel perspective, focusing on the process of learning and individual development. Hamstra, Van Yperen, Wisse, and Sassenberg (2014) examined the effects of transformational and transactional leadership on achievement goals, specifically mastery goals and performance goals. Achievement goals are either focused on one's self or others while also motivating individuals through positive rewards or avoiding negative outcomes. "A mastery-approach goal-oriented motivational climate can be created, by accepting errors or mistakes as part of the learning process, particularly in training programs, and by emphasizing enjoyment, interest, and collaboration" (Van Yperen & Orehek, 2013, p. 77). Hamstra et al. (2014) found that transformational leadership was positively related to individual endorsement of achievement goals and transactional leadership was positively related to performance goals. In other words, transformational leadership influenced individuals to focus more on performing better than they had previously, while transactional leadership influenced individuals to perform better than others.

Several studies have been conducted that show a positive linkage exists between transformational leadership and student performance and outcomes. Fredendall et al., (2001) found that as instructor commitment to the goal increased, so did student commitment, which could be linked to individualized motivation and idealized influence (behavior). As part of the study conducted by Fredendall et al. (2001), student goal commitment and performance was measured by keeping the classroom clean. As the instructor increased leadership (e.g., by

example, direction, or positive reinforcement) students performed better and kept the classroom cleaner. Poon (2003) posited that motivating students was a prime factor for training efficacy and also determined that successful trainers used problem-solving techniques with students instead of providing the correct answers to problems, thereby encouraging students to try various methods to solve problems (intellectual stimulation). Pounder (2003) explored the possibility of using transformational leadership to enhance student outcomes through management development during classroom instruction. Inspirational motivation, intellectual stimulation, and individualized consideration are three of the transformational leadership characteristics identified by Pounder (2003) as having an impact on student performance and learning. Transformational leadership could also be used to teach business ethics to demonstrate for students the values held by the instructor, thereby motivating students to establish their own standards (Ruddell, 2008).

To link transformational leadership with motivation, Pounder (2009) found that transformational leadership qualities of a teacher in a classroom setting had a positive influence on motivation and satisfaction, which led to increased performance. This knowledge prompted a study conducted by Tsai and Lin (2012), in which it was determined that transformational leadership characteristics influence, positively, student engagement and satisfaction. As studies were conducted during the past two decades, the knowledge of transformational leadership has increased substantially. The outcomes linked to this type of leadership, especially in the classroom, are becoming more concrete. Further research was conducted that shows the relationship between transformational leadership and student outcomes to be positively related. Bolkan and Goodboy (2009) found moderate to strong positive relationships with learning

outcomes and participation by students. Additionally, Bolkan and Goodboy (2009) suggested the factors within the transformational leadership construct are positively related to student outcomes.

Leadership in a classroom setting is essential for establishing instructional objectives, a vision of the future, and standards to achieve (Gavin, Brown, & Chai, 2012). It is necessary to underscore the application of transformational, and the full range of leadership model, to classroom and training events. Tsai and Lin (2012) found that transformational leadership characteristics influence, positively, student engagement and satisfaction and identified the factors of transformational leadership as important for student achievement. Empirical evidence by Walumbwa et al. (2004) supported the idea that transformational leadership was positively associated with leadership outcomes and was positively associated with motivation, satisfaction, extra effort, and perceptions of leader effectiveness. Additionally, instructors that worked to link student personal interests with course objectives were more successful in meeting course goals.

The research previously conducted on transformational leadership clearly shows a positive connection with improved performance (Arthur & Hardy, 2014; Bacha, 2014; Barling, Weber, & Kelloway, 1996; Bass et al., 2003; Beauchamp et al., 2014; Chi & Pan, 2012; Dvir, Eden, Avolio, & Shamir, 2002; Harrison, 2011; Heck, 2009; Kovjanic, Schuh, & Jonas, 2013; Pounder, 2003, 2014; Sahin, Çubuk, & Uslu, 2014; Soane, Butler, & Stanton, 2015; Walumbwa, Avolio, & Zhu, 2008; Wang, Oh, Courtright, & Colbert, 2011). Goals, motivation, effort, problem solving, and performance, among all sorts of other things, are improved and/or achieved through the factors of transformational leadership. It appeared to be applicable to vastly

different situations, organizations, and even cultures. Further explanation of the factors that comprise the transformational leadership construct are required and provided.

Idealized influence. Transformational leaders lead by example and serve as role models for followers (Bass & Riggio, 2006). The term idealized influence (II) is used to define this concept as it relates to leadership in an organization. “Transformational leaders become a source of inspiration to others through their commitment to those who work with them, their perseverance to a mission, their willingness to take risks, and their strong desire to achieve” (Onorato, 2013, p. 40). SPOs in training within NNSA should look to instructors for an example of how to perform at an optimal level. Instructors in NNSA are typically high-performing individuals with vast experience in military, police, or other security organizations. Influence can be attributed (from the student point of view) and behavior of the leader or instructor. Idealized influence attributed (IIA) pertains to characteristics that are possessed by the leader from the follower’s perspective. Idealized influence behavior (IIB) denotes observable actions that are influential from the follower’s point of view. (Hemsworth, Muterera, & Baregheh, 2013). Idealized influence was originally thought of to be charisma by Bass (1985). Regardless of the term used, the concept of setting a positive example and behaving appropriately, as one would prefer others behave, is a key component to transformational leadership.

Inspirational motivation. This leadership factor is defined by the leader that creates and a vision of the future with high expectations through exceptional communication that encourages commitment to the organization and esprit de corps (Onorato, 2013). Instructors support the mission of the protective force by enhancing the knowledge, skills, and abilities of SPOs. It seems reasonable, during training evolutions, for instructors to impress upon SPOs the

importance of the mission. The linkage between training and mission importance should, therefore, motivate SPOs to work diligently to improve individual and team skills, thereby improving mission effectiveness. After all, the reason training in NNSA exists is to ensure the men and women of the protective force are completely capable of responding to and defeating any adversary from the full spectrum of threats.

Intellectual stimulation. Instructors that demonstrate this behavior challenge students to rethink solutions and approaches to previous problems and to be creative in problem solving through innovation (Onorato, 2013). An instructor that displays intellectual stimulation should challenge SPOs to create new approaches for solving traditional problems. These instructors also inspire innovation and encourage deliberate thought processes for reacting to novel situations. In doing so, SPOs become more capable of success when faced with an unknown and unfamiliar situation not previously experienced (O'Donnell, Moise, Warner, & Secrist, 1994; Schaab & Dressel, 2001; Vandergriff, 2006). Quinn (2011) discussed one approach to train leaders to become more adaptive through the use a computer simulation that created novel and ambiguous situations. This required leaders to make decisions based on principles and, over time, increased adaptability and creative problem solving skills. West (2012) also found individuals with more opportunities to serve in leadership roles improved leadership effectiveness.

Individualized consideration. Individualized consideration requires the leader to treat followers as individuals to meet specific and developmental needs through personally tailored guidance (Loon, Lim, Teck, & Cai, 2012). Loon, Lim, Teck, and Cai (2012) also found individualized consideration to be predictive of job-related learning. In other words, employees

that were treated as individuals by superiors were more likely to learn quicker while on the job. Instructors as leaders can use the same approach to maximize performance improvement in all SPOs during a given training evolution. If instructors were to conduct training or practice based on the skills of the best or worst performer, the remaining SPOs would either struggle and become frustrated or become bored. Therefore, based on this concept, instructors should tailor training to meet the needs of individuals in order to maximize training outcomes for everyone.

Transactional leadership. According to Laohavichien, Fredendall, and Cantrell (2009), transactional leadership is a process for exchanging rewards based on performance and behaviors. The leader and follower agree upon deliverables and expected behaviors prior to work execution and the leader either rewards or punishes followers based on their compliance with requirements (Bass & Riggio, 2006; Clinebell, Skudiene, Trijonyte, & Reardon, 2013). With this form of leadership, leaders do not look to followers for innovative ideas about how to change the organization and typically do not empower followers to make decisions, other than the amount of effort given during work (Swid, 2014). Leaders are satisfied with current work operations and only require followers to perform at predetermined, levels. Clinebell et al. (2013) claim the effectiveness of the rewards or avoidance of punishment is dependent upon the follower's desire to be rewarded or avoid penalties and the leader's ability to reward or punish. Importantly, the leader's ability to reward or punish is based on the perceptions of the follower as opposed to the leader's actual ability.

Transactional leadership during training involves the instructor defining the training goals and objectives for the SPOs. Participation, adherence to safety standards, and successful completion of the training evolution are typically the desired outcomes. Rather than creating

training events that challenge SPOs to improve performance through deliberate practice, SPOs generally follow a scripted response created by the instructor cadre. From the instructor standpoint, this minimized the opportunities for the student to make a mistake (e.g. get injured) but also decreased the amount of time required to train a group of SPOs. Efficiency has overtaken effectiveness and performance improvement. Once SPOs successfully complete the exercise or training event they are deemed *trained* [emphasis added] (U. S. Department of Energy, Office of Health, Safety and Security, 2011). It should also be noted that transactional leadership through contingent reward and active management-by-exception, discussed later, also influenced student performance (Schiena et al., 2013).

Transactional leadership contains several elements: contingent reward, active management-by-exception, and passive management-by-exception (Bass & Riggio, 2006). Each element uses a different approach for subordinates to achieve desired results established by the leader or the organization. Leaders exercise the option that is most applicable to the organizational structure and personal specific leadership capabilities, whether using a deliberate thought process or not.

Contingent reward. Contingent reward is an approach leaders use to motivate followers to achieve desired results. The leader assigns work or agrees with the follower on desired behaviors, then promises rewards (e.g., praise or bonuses) to the follower when the desired outcomes are reasonably achieved (Bass & Riggio, 2006). The use of contingent reward has been shown useful in achieving desired organizational results when expectations are clearly defined (Brown & May, 2012). Contingent rewards have also been found to be positively related to employees exerting extra effort, efficiency, and satisfaction with managers (Quintana, Park, &

Cabrera, 2015), which tend to group more with transformational leadership than transactional leadership. However, the leader must have the power to reward followers for meeting or exceeding expectations and the follower must have a desire for the reward (Clinebell et al., 2013). Additionally, contingent rewards may be accompanied by some, if not all, of the transformational leadership characteristics identified previously.

Management-by-exception. Management-by exception is an approach for supervising work and governing personnel by observing and overseeing operations or performance (Edwards, Schyns, Gill, & Higgs, 2012). The leader's purpose for using this approach is to identify deviations from standards, mistakes, and/or errors so that corrective actions may be taken to avoid future discrepancies (Bass & Riggio, 2006). There are two types of management-by-exception: active and passive.

Active management-by-exception. In this approach, the leader actively monitors work performed by the group. However, the purpose of monitoring is to look for divergence from requirements and set criteria. Active management-by-exception was found to have a negative impact on an employee's sense of competence, or desire to effectively cope with the environment at work (Hetland, Hetland, Cecilie, Pallesen, & Notelaers, 2011). A SPO conditioned to operate within a framework of active management-by-exception with low competence and adaptability could potentially struggle to make timely decisions in the absence of leadership. This could have negative impacts on the abilities of the protective force to respond appropriately to novel situations experienced during both routine and emergency situations. Typically, the role of the protective force instructor falls in line with this leadership approach. Instructors stand behind the firing line or behind the SPOs and watch for potential mistakes with

weapon handling, safety, movement, or even communication. At this point, the instructor steps in to make a correction. This approach denies the student the opportunity to think through problems and solve them (intellectual stimulation) and also places the responsibility for performance squarely on the shoulders of the instructor.

Passive management-by-exception. Instead of observing operations and being somewhat involved in work performed by subordinates, a passive leader waits for issues to arise before taking action. The main difference between passive and active management-by-exception is the way negative information is delivered to the leader. As opposed to the leader identifying the problem or deficiency himself or herself, a leader that exhibits passive management-by-exception waits for someone else to communicate deviations from standards. Failing to intervene when a problem occurs diminishes employee trust and commitment, which also decreases subordinate effort (Mesu et al., 2013). By examining the results of transformational leadership, Indrayanto, Burgess, Dayaram, and Noermijati (2014) identified trust as a critical factor to achieve positive results and that transformational leadership had a significant and positive influence on commitment. Without trust and commitment subordinates will not give as much effort as they could.

Passive-avoidant. This is also referred to as *laissez-faire*, which is, essentially, no leadership at all. *Laissez-faire* is the absence of leadership, which has been found least effective according to the vast majority of research on the topic (Bass & Riggio, 2006). Leaders evade issues that require decisions, refuse to take action, and do not provide support for the team or subordinates. This type of leadership, or lack thereof, increases conflicts within an organization, which are normally associated with low levels of well-being and health (Zwingmann et al.,

2014). Instructors that provide no leadership or guidance during training evolutions will negatively impact performance. In a study conducted by Hetland, Skogstad, Hetland, and Mikkelsen (2011), passive-avoidant leadership, or laissez-faire, was examined and found to have a negative relationship with a learning climate, which supports the claim for negative performance.

Multifactor Leadership Questionnaire (MLQ)

The multifactor leadership questionnaire (MLQ) is the most widely used tool for identifying leadership behaviors (transformational, transactional, and passive-avoidant) of individuals in a leadership role (Keung & Rockinson-Szapkiw, 2013; Hemsworth et al., 2013) and has been used in both public and private organizations. Bass and Avolio first created the MLQ in 1990. Not only did the survey tool examine each factor within the full range of leadership model, it also measured outcomes of the leader's effectiveness, the leader's ability to inspire subordinates to use extra effort, and satisfaction with the leader. This tool has been modified, slightly, over time, to the version used for this research, which is the MLQ (Form 5X) that was published by Mindgarden, Incorporated.

Over the past two decades, the MLQ has been studied and examined for validity and reliability. Antonakis, Avolio, and Sivasubramaniam (2003) conducted one main study in 2003, which consisted of an analysis of data from many different sources, both published and unpublished. There were also two parts to this study. First, the MLQ was tested at the item level and, second, the researchers used factor-level data in order to replicate the results of the first part to analyze the remaining contextual factors (Antonakis et al., 2003). Based on the results of the analysis, the researchers found the MLQ (Form 5X) to be the most effective tool for examining

the full range of leadership model and its theoretical framework (Antonakis et al., 2003). In other words, the tool accurately measures the leadership behaviors in the full range of leadership model consistently among various organizations. However, when collecting data, researchers should examine similar situations and like organizations because uniform samples provide more consistent results when testing the multidimensionality of the MLQ (Antonakis et al., 2003).

The MLQ contained 36 standardized items designed to assess each of the nine leadership characteristics associated with the full range of leadership model. There are an additional nine items intended to measure outcomes, including ratings of the leader's effectiveness, satisfaction with the leader, and the extent to which followers exert extra effort as a result of the leader's performance (Bass & Riggio, 2006).

MLQ Outcome Variables

Bass and Riggio (2006) included three outcomes from leadership that include: extra effort, perceptions of leader effectiveness, and satisfaction with the leader. These outcomes have been analyzed to determine relatedness to each of the factors within the full range of leadership model. The relationship of each outcome with leadership factors is important to understand because it provides application for the full range of leadership model. The independent variables for this study included the leadership characteristics within the full range of leadership model, while the dependent variables were the outcomes that follow (extra effort, perceptions of leader effectiveness, and satisfaction with the leader).

Extra effort. Employees sometimes exert extra effort, beyond that which is expected or required, at work. In an effort to understand some of the reasons for this phenomenon, Avolio

and Bass (2004) included items in the MLQ that relate to extra effort. In one study, idealized influence (attributed), inspirational motivation, and contingent reward were shown to positively influence employee motivation to exert extra effort (Quintana et al., 2015). In another study examining student advisors, it was determined that transformational leadership and contingent reward were positively related to students exerting extra effort (Barbuto, Story, Fritz, & Schinstock, 2011). Extra effort provided by protective force SPOs during off-post training should increase the effectiveness of deliberate practice, thereby resulting in improved performance.

Perceptions of leader effectiveness. Perceived effectiveness of leaders may come from subordinates, peers, and/or superiors. It has also been suggested that positive transformational leadership may result in positive perceptions of leader effectiveness (Bass & Riggio, 2006). Guay (2013) determined that if supervisors have a positive perception of a subordinate leader's effectiveness, so too will that subordinate leader's followers. Transformational leadership was also found to be positively related to perceptions of leader effectiveness in the public sector (Pimpa & Moore, 2012). Furthermore, increased positive perceptions of leader effectiveness can stimulate followers to be more effective, which can lead to positive organizational results (Bass, 1996). Instructors deemed effective by SPOs will, therefore, have stronger influence during training and presumably increase SPO performance.

Satisfaction with the leader. Being satisfied with a leader results in more than simple happiness at work; it may result in increased performance and productivity. Transformational leadership was found to be positively related to satisfaction with the leader and also related to employees exerting extra effort and higher levels of organizational commitment (Peus, Wesche,

Streicher, Braun, & Frey, 2012). Through the main components of transformational leadership, leaders are able to motivate employees, stimulate minds, tend to the needs of each employee, and do so in a charismatic way that increases employee satisfaction, and ultimately improve task performance (Wang et al., 2011). This outcome of leadership is critical to improving performance of protective force SPOs, which leads to higher mission capabilities, effectiveness, and accomplishment.

Work Engagement

Work engagement is the amount of dedication an employee exhibits in terms of motivation, action, and commitment (Kovjanic et al., 2013; Sahin et al., 2014). From the examination of transformational leadership factors, it seemed appropriate to infer work engagement is also an outcome of positive leadership. Sahin et al. (2014) determined employees that are engaged and stimulated by their work exert extra effort and have higher levels of performance.

Kovjanic et al. (2013) also state that three basic needs satisfaction mediate transformational leadership and work engagement. Those factors are the need for competence, the need for relatedness, and the need for autonomy (Kovjanic et al., 2013). The transformational leader is in the right position to satisfy those needs for employees and therefore increase work engagement.

Furthermore, this concept is clearly related to the training world. SPOs should be engaged during training and show vigor (train hard and focus on improvement with energy and persistence), dedication (enthusiasm and strong understanding of how training relates to the mission), and absorption (concentrating on improving performance). Transformational leaders

(or in this case instructors) evoke high levels of work engagement, according to Kovjanic et al. (2013).

Need for autonomy. Autonomy relates to an employee's ability to make decisions and take actions without specific direction or guidance from the leader. One of the basic psychological needs for an employee to be motivated and perform well is autonomy (Hetland et al., 2011b). Within the workplace, under the supervision of transformational leaders, employees are encouraged to take initiative and engage problem solving (Kovjanic et al., 2013).

From a training perspective, this allows SPOs the opportunity to improve decision-making skills and build confidence in their abilities over time within a safe, learning environment. Transformational leaders use this approach through various forms, but autonomy mostly relates to intellectual stimulation and inspirational motivation. Autonomy provides an opportunity for employees, or SPOs, to develop, which results in better performance and higher levels of motivation (Hetland et al., 2011a).

Need for competence. Employees need to feel competent in their jobs to prevent perpetual frustration and provide them with a sense of accomplishment (Kovjanic et al., 2013). Transformational leaders help employees feel competent in their jobs by working with them, providing guidance, counseling, and coaching (Kovjanic et al., 2013). Transformational leaders use various tools to encourage employees to find different approaches to solving problems, which leads to higher levels of job skills and proficiency (Hetland et al., 2011a).

Instructors that display transformational leadership characteristics are positioned to enhance mission capabilities of individual SPOs and teams, which satisfy the need for competence, especially considering the potential deadly results of poor performance. This also

leads to a sense of accomplishment by the student that results in higher levels of engagement (Hetland et al., 2011a). Competence generates confidence, both from the individual SPO and the leader.

Need for relatedness. Relatedness is the need to serve others within the organization or group. This drives employees to work, not just for self-interests or rewards, but for others as well. This leads to higher levels of motivation and also promotes wellbeing for individuals and teams (Hetland et al., 2011a). Transformational leaders are able to increase relatedness by providing and communicating a vision of the future followers can internalize (Kovjanic et al., 2013).

From a protective force standpoint, relatedness is vital to the accomplishment of the mission. The mission requires the entire team to work together to secure each facility and be prepared for any action from the full spectrum of threats. Instructors capable of communicating relatedness during training events are more likely to encourage SPOs to perform better and be more engaged during training.

Within the framework of a training organization, it is imperative for instructors to display the characteristics of transformational leadership in order to foster higher levels of work (training) engagement. Allowing SPOs to deliberately practice autonomous decision-making, improve competence in job/mission tasks, and build teams through relatedness, will improve performance of protective force members and enhance mission accomplishment.

Applicability to the Classroom

Transformational leadership is not just suited for a business in the corporate world or a non-profit organization; it is also particularly relevant to education. Teachers and instructors

have the opportunity to display the characteristics of transformational leadership that can inspire students to work harder, be more engaged, learn how to make decisions, and ultimately become more effective (Pounder, 2014). Additionally, applying the full range of leadership model to the classroom is acceptable and continues to be useful in predicting student outcomes (Pounder, 2008). Furthermore, research confirming the impact of instructional leadership on student outcomes has been widely disseminated among educational leaders and policy makers and shaped the policy framework which guides all leadership development initiatives in New Zealand (Gavin, Brown & Chai, 2012).

Subordinate learning. In terms of student learning, Pounder (2009) found considerable evidence to support the notion that transformational leadership characteristics of teachers motivate students to exert extra effort and therefore perform better. Pounder's 2009 study also found that perceptions of teacher effectiveness and satisfaction with the teacher were positively related to the factors of transformational leadership. Richardson, Abraham, and Bond (2012) found that student effort was positively related to academic performance.

Business model in the classroom. Many of the leadership concepts reviewed focus largely on the corporate world. However, teachers and instructors are leaders too and they are responsible for the growth, learning, and fulfillment of student needs. Teachers that exemplify desired student behaviors, using idealized influence, are the most effective (Sze & Kester-Phillips, 2008). Rather than following strict rules and guidelines, the teacher encourages learning, places accountability for learning on the student, and expects students to regulate their own behaviors, all of which are important in the workplace as well (Sze & Kester-Phillips, 2008). Creating successful learning environments must incorporate transformational leadership

characteristics. The following are excerpts from research conducted by Sze and

Kester-Phillips (2008) with reference to a specific transformational leadership quality:

- Building and maintaining a culture in which common language is employed, ideas are shared, and staff members [workers] operate within norms of cooperation (Inspirational Motivation)
- Operating from a well-articulated and visible set of ideals and beliefs regarding schooling [purpose], teaching [management], and learning [product] (Inspirational Motivation)
- Recognizing and celebrating the legitimate successes of individuals within the school [company] as well as the school [company] as a whole, also recognizing and acknowledging failures when appropriate (Individualized Consideration)
- Fostering knowledge of research and theory on best practices among the staff [workers] through reading and discussion (Intellectual Stimulation) (p. 4).

These items and the approach of overlaying a business leadership model into a school or a classroom enhances collaboration, innovation, and increases productivity while creating a safe environment for enhancing the work of students and employees (Sze & Kester-Phillips, 2008).

Transformational leadership in the classroom. The concept of leadership in the classroom has been examined by several studies over recent years (Bolkan & Goodboy, 2009, 2011; Harrison, 2011; Ojode et al., 1999; Pounder, 2008; Walumbwa, Wu, & Ojode, 2004). Charismatic leadership, or idealized influence, was determined to be beneficial in engaging students that were previously resistant to learning (Bolkan & Goodboy, 2011). In a study of transformational leadership in the classroom, Bolkan and Goodboy (2009) found moderate to strong correlations among professor charisma (idealized influence), inspirational motivation, and

individualized consideration with the leadership outcomes of student extra effort, effectiveness, and satisfaction.

Walumbwa et al. (2004) found that transformational leadership characteristics displayed by professors were also positively related to student outcomes. It should also be noted that gender was also considered during this study and was found to be non-determinant. Pounder (2008) also found the full range of leadership model, when applied to a classroom, relevant and capable of producing outcomes and results consistent with other environments. In all, the concept of transformational leadership within a classroom has been shown to be relevant and useful in determining student outcomes.

Academic Performance

Teacher or instructor transformational leadership characteristics have been linked to student extra effort, perceptions of instructor effectiveness, and satisfaction with the instructor, but there are more positive outcomes that have been examined. One of the most notable discoveries is that transformational leadership in the classroom actually improves student academic performance (Pounder, 2009). There are two specific concepts to discuss in order to understand how academic performance improves based on leadership outcomes.

Perceptions of leader effectiveness. The perceptions of effectiveness of a leader from a subordinate standpoint is one of the outcomes of transformational leadership, which has been discussed previously. To go one step further, when the leader is a teacher or instructor, Heck (2009) found a positive relationship between teacher effectiveness and student academic performance. Regardless of a leader's job title (e.g., manager, director, teacher, instructor) the outcomes of transformational leadership remain constant, which has been determined by many

studies, but most importantly by Bass (1997). Bass (1997), used the MLQ to study transformational leadership in various organizations and cultures and found consistency in results and outcomes, which adds to the reliability of the MLQ. Dvir, Eden, Avolio, and Shamir (2002) used Bass' findings in their study and concluded the use of transformational leadership is useful in developing employees and increasing performance regardless of organizational conditions.

Effects on students. A transformational instructor (or instructor that displays transformational leadership characteristics) can increase student outcomes because the instructor is able to inspire the students to work harder, is able to link training/instructional goals and objectives to specific mission requirements, and is able to motivate students by aligning values, beliefs, and desires to the training evolution (Walumbwa et al., 2004). As related to the context of protective force instructors, this concept is especially important. Transformational instructors should be able to clearly articulate a vision of mission performance that is more effective as a result of a specific training evolution. This should, in turn, motivate SPOs to engage more in training to produce the increase in knowledge, skills, and/or abilities necessary for improved mission performance.

Student effort. Learning, or improving knowledge, skills, and abilities requires a certain amount of effort from the student. However, some students may require more effort than others to improve. At high school and university levels students that exerted extra effort were found to have improved academic performance (Pounder, 2009). Soldiers in training that gave extra effort were also found to have better performance than that of other soldiers, based on the transformational leadership characteristics of their instructors (Dvir et al., 2002). Arguably, the

same may be true within DOE training where instructors adopt or display transformational leadership characteristics. This concept typically holds true during any type of deliberate or structured practice. The harder an athlete practices under the conditions to be encountered during a game or competition, normally, the better the performance during that game (Wang, 2010). Although there are exceptions, it is also clear that those who do not expend effort during practice will lose the competitive edge.

Student motivation. Motivational instructors discuss training objective with enthusiasm, explain the relationship between training and the mission, articulate a compelling vision of the future, and explain how challenging tasks can be accomplished, which encourages students to imagine and take responsibility for achieving higher levels of mission execution within increasingly difficult conditions (Bass, 1996). Protective force instructors have a difficult job of relaying the reason for training to SPOs, in part because training with live weapons and ammunition cannot be conducted within the nuclear facility. It is undesirable to fire live weapons within those facilities unless absolutely necessary. Therefore, instructors must explain how a specific training evolution is related to the mission carried out on site, at the facility. Instructors must convince the SPOs of the value in deliberate practice of each task selected for training in order to improve mission performance.

Beauchamp et al. (2014) found that physical education teachers who were considered transformational teachers were able to increase the level of student motivation to work harder during class but also to conduct physical activities at home more often. This type of motivation may be considered intrinsic motivation, or motivation that comes from within, which has also been found to improve student adaptability, problem solving, and achievement (Bolkan, 2015).

These types of outcomes are necessary for a SPO to possess in order to be effective in novel, combat related situations.

Student participation. Comments and questions raised by students are examples of participation in the classroom, which could lead to student achievement, better test scores, increased motivation, and confidence (Bolkan & Goodboy, 2009). Applying this concept to that of protective force training may yield similar results, but that data was not collected as part of this study. However, Bolkan and Goodboy (2009) found a moderate positive relationship between cognitive learning and participation, which indicates students that participate more, learn more. Also, intellectual stimulation was found to have a strong positive correlation with student engagement, which includes participation (Bolkan, 2015). For protective force training, these results suggest instructors should find ways to engage their SPOs more and increase participation, which can be done through inspirational motivation, as stated above, in order to improve performance.

Student empowerment. Within the context of this research, empowerment was considered the amount of initiative, independent thought, critical thinking, new approaches to old problems, and self-efficacy (Dvir et al., 2002). Individuals with high self-efficacy are more apt to finish a task or achieve a goal, which could be applied to improving tactical performance by protective force members. Bolkan (2015) also found students with higher intrinsic motivation to be more likely to engage in learning activities beyond the classroom as well as enjoying better performance within the classroom. Again, SPOs could learn on their own and hone their own knowledge, skills, and abilities as a result of transformational instructors. Dvir et al. (2002) conducted an experiment and discovered that increasing transformational leadership

characteristics of military trainers increased empowerment and self-efficacy of trainees. Furthermore, the performance within each experimental group was higher than that of each control group in every measured area (Dvir et al., 2002).

Modified MLQ

Mindgarden, Incorporated copyrighted the MLQ. The use of this product required its permission (along with a fee) and any modification made to the questionnaire must be submitted to Mindgarden Inc. for review and approval. Since the MLQ has been shown useful in a number of various industries and cultures, Mindgarden Inc. rejected the requests for modifications to certain items. However, Mindgarden Inc. did approve administration of modified items only after all SPOs completed the standard MLQ.

Modifications for protective force training. Certain items contained in the standard MLQ, while suitable for this type of environment, seemed reasonable to be modified in order to enhance SPO understanding and provide more accurate results. Pounder (2008) took a similar approach for use in a university setting and modified many of the original MLQ items to better represent a classroom setting. Other university colleagues reviewed the modifications and factor analysis that was conducted to determine goodness-of-fit with the modified instrument. In other words, the modified items produced the same results that the original MLQ would have produced. For this study the validity and reliability of each item modified for protective force training was examined, the results of which are noted in Section 3.

Learning outcomes. While the MLQ identified leadership outcomes of extra effort, satisfaction with the leader, and perceptions of leader effectiveness, Bolkan and Goodboy (2009) investigated learning outcomes (variables) generated by transformational leadership in the

classroom. Those outcomes include cognitive learning, affective learning, state motivation, and communication satisfaction. Moderate to strong positive relationships between transformational leadership factors and learning outcomes were discovered in a study conducted by Bolkan and Goodby (2009). Harrison (2011) found transformational leadership in the classroom superior to transactional leadership when predicting cognitive learning, affective learning, state motivation, and communication satisfaction.

Cognitive learning. Acquisition of knowledge, skills, and/or abilities typically follows a general path, commonly known as Bloom's Taxonomy, which originally followed the progression through knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom, 1956). However, this taxonomy has been modified and now progresses through: remember, understand, apply, analyze, evaluate, and create (Anderson & Krathwohl, 2001). Cognitive learning is understanding instructional material, mentally processing the information, and applying the concepts learned to solve problems and evaluate performance (Harrison, 2011). An instructor that demonstrates transformational leadership during training may enhance student cognitive learning and task performance. Learning or practicing a task and moving through each level of the taxonomy should produce an individual capable of reacting to any situation in which that task is required.

Affective learning. Student feelings of and concurrence with the instructional information presented is known as affective learning (Harrison, 2011). This is an important concept for protective force personnel because their feelings toward the tactic, technique, or procedure being taught could influence mission performance negatively if the student does not agree with the material. So, instructors with the right leadership characteristics, capable of

positively influencing affective learning should be capable of motivating SPOs to practice and train harder, thereby improving mission performance.

State motivation. The useful application of newly acquired knowledge, skills, and/or abilities through student learning effort is considered state (Bolkan & Goodboy, 2009). Basically, the student engages in training activities with the personal goal of learning. Phipps, Prieto, and Ndinguri (2013) also recognized that motivation to learn is an important factor, which is also related to inspirational motivation. Therefore, SPOs who are motivated to learn, engage in the learning process, and understand the meaning or the purpose of training are more likely to improve performance than SPOs who are not motivated. Instructors capable of motivating SPOs in the protective force realm should increase student performance.

Communication satisfaction. Students need to clearly understand information and direction provided by the instructor in order to move through Bloom's Taxonomy (Adams, 2015). Satisfaction with the communication process and confidence of understanding can improve the learning experience (Sabie & Androniceanu, 2012). During protective force training, it is important for SPOs to clearly understand directions and instructions from instructors because of the dangerous nature of tactical training, especially when live weapons fire is involved. Bolkan and Goodboy (2009) found strong to very strong intercorrelations between communication satisfaction and the following: idealized influence (charisma), individualized consideration, intellectual stimulation, cognitive learning, affective learning, and motivation. Therefore, instructors should be clear when giving directions and communicating with SPOs in order to foster learning and improve performance.

Performance

Performance is ultimately the purpose of training for protective force personnel. Without strong job performance, the mission could fail, which is why training is so important.

Fortunately, research indicated a positive linkage between transformational leadership characteristics and performance (Pounder, 2009). Barling, Weber, and Kelloway (1996) found that training bank managers in transformational leadership produced better financial results than managers not trained in transformational leadership. This study was the first to examine the relationship between transformational leadership and some amount of performance. Dvir, Eden, Avolio, & Shamir (2002) conducted an experiment with infantry cadets and determined that instructors with transformational leadership characteristics, in the experimental unit, outperformed the control unit in every tested area.

Transformational leadership and contingent reward were both found to be predictive of unit performance (Bass et al., 2003). The inclusion of contingent reward was considered to be necessary within a military unit to ensure orders are given clearly and expectations are well understood. Transformational leadership was also found to improve performance of low-performers as indicated in a quasi-experiment conducted by Arthur and Hardy (2014). The results from Arthur and Hardy (2014) also showed a significant positive shift in performance between the experimental group and the control group, within the context of infantry recruit training. When transformational leadership is present, subordinates display behaviors that promote increased levels of job (task) performance (Bacha, 2014).

Research Variables

For this research project, the independent variables are the factors listed in the full range of leadership model. Specifically, Idealized Influence (Attributed), Idealized Influence (Behavior), Inspirational Motivation, Intellectual Stimulation, Individualized Consideration, Contingent Reward, Management-by-Exception (Active), Management-by-Exception (Passive), and Laissez-Faire (Avolio & Bass, 2004). Previous research (Arthur & Hardy, 2014; Bacha, 2014; Bass, 1996; Bass et al., 2003; Bolkan & Goodboy, 2009; Hedlund & Österberg, 2013; Indrayanto et al., 2014; Mesu et al., 2013; Pounder, 2003, 2009; Schiena et al., 2013; Tsai & Lin, 2012; Walumbwa et al., 2004) has identified strong correlations between these independent variables, and dependent variables of extra effort, perceptions of leader (instructor) effectiveness, and satisfaction with the leader (instructor) (Avolio & Bass, 2004). Therefore, for this research it was necessary to explore the correlations between transformational leadership and student outcomes, transactional leadership and student outcomes, and passive-avoidant leadership and student outcomes.

Transition and Summary

Training programs within the NNSA do not always produce the performance necessary for complete, total, and perfect mission accomplishment. In order to better understand current protective force training instructor leadership characteristics, the full range of leadership model presented by Bass (1985) was chosen because it covers the full spectrum of traits. The model contains transformational leadership, transactional leadership, and passive-avoidant leadership. To measure these characteristics, the MLQ was administered to SPOs at the completion of a training day. Results from previous research using the MLQ have shown direct and positive

correlations between transformational leadership and subordinate extra effort, perceptions of leader effectiveness, and satisfaction with the leader. In the current research, the term leader was replaced with instructor, yet valid and reliable results were expected due to the vast application of the MLQ and extensive previous reliability and validity testing of the instrument.

Additionally, Kovjanic et al. (2013) determined that workers also have the needs for autonomy, competence, and relatedness in order to maximize work engagement. The transformational leader, or in this case instructor, can satisfy those needs, which are related to the leadership outcomes previously mentioned. This leads to transformational leadership application to the classroom, in which academic performance has been shown to improve when teachers display such characteristics. These characteristics (transformational leadership) lead students to exert extra effort, have higher levels of motivation, participate more, and feel empowered while learning (Bolkan, 2015; Bolkan & Goodboy, 2009; Dvir et al., 2002; Walumbwa et al., 2004).

Bolkan and Goodboy (2009) also found a direct correlation between student performance and cognitive learning, affective learning, state motivation, and communication satisfaction. This was also linked to the transformational leadership characteristics of the teacher. This review of current literature suggested that transformational leadership was a predictor of positive student performance through the leadership (student) outcomes (extra effort, perceptions of instructor effectiveness, and satisfaction with the instructor), which were identified by Bass and Riggio (2006).

Section 2: The Project

Research to examine the leadership qualities of National Nuclear Security Administration (NNSA) full-time protective force instructors was conducted. The components included in the full range of leadership model were used as a basis for the project to include transactional, transformational, and passive-avoidant styles of leadership. The leadership characteristics used by instructors in NNSA was not known and research on this topic, within this environment has not been conducted previously. However, there have been several studies conducted on the transformational leadership impact on students within a university setting and most of those studies have confirmed that transformational leadership is predictive of student performance. This study determined if the same was true within NNSA's protective force training.

This section of the project contains a discussion of the activities required to actually conduct the research, collect data, and analyze data. More specifically, this section includes information about the purpose of the project, data collection methods, participant selection, the research method and design, data organization, population and sampling, data analysis, and a discussion of the validity and reliability of the data. These were the physical activities required to conduct the research based on the problem statement and the purpose statement.

Purpose Statement

The purpose of this quantitative study, through the use of correlational research, was to examine the relationship between leadership characteristics of instructors, from the full range of leadership model (Bass, 1985) and student outcomes. Identification of instructor leadership

characteristics that are positively correlated with student outcomes could enhance training and improve mission performance. This was the first step to understanding leadership within NNSA protective force organizations and protective force instructors. No other scholarly research has been conducted on this topic, within this organization and this study could lead to other future studies. The results were consistent with findings in earlier studies conducted in classrooms (Pounder, 2014), within military organizations (Bass, 1996), and in police organizations (Indrayanto et al., 2014).

Furthermore, the results of this study showed a significant correlation between leadership characteristics and outcomes, therefore, recommendations for interventions were offered. An intervention conducted in a formal training environment or through self-training has been found to be effective in growing leadership characteristics (Fitzgerald & Schutte, 2010) and was recommended for NNSA. Changes in the culture of the organization (e.g., presenting the study to senior contractor and federal personnel) were also recommended based on the results of this study.

Role of the Researcher

The researcher played an important role in this project. In order to ensure this research may be replicated by others, it was critical to describe, in detail, the exact actions the researcher performed during site visits and data collection. The actions of the researcher also provided credence to the method and design of the project as well as substantiated data analysis claims, results, and recommendations.

During data collection, the researcher observed off-post training for each day to take notes of the training process. This added anecdotal evidence to the data and helped partially

explain some of the scores from the MLQ administered to SPOs. Additionally, the subjects taught at each site varied and contributed to differing values on the MLQ. This information was very important during data analysis and was accounted for. For instance, some training days included deliberate practice on a set of tasks that significantly impact on-the-job/mission performance, while other training tasks focused on regulatory compliance requirements such as refresher classes on report writing. SPOs could be affected by training subjects and therefore, it was important that the researcher be present during training in order to observe student behaviors, reactions, and participation in the subjects taught.

Also, during survey administration, the researcher informed the SPOs to complete the questionnaire only on the training conducted for that specific day. This was a necessity because the researcher observed only that day's training and understood exactly what occurred, which assisted in data analysis. Furthermore, SPOs were instructed to complete the survey based on the instructors present for that training day. Due to time restraints, collective bargaining agreements, mission requirements, and resources available, it was not possible for each student to complete an MLQ on every instructor present during the training day even though each training event required varying numbers of instructors based on the training task and requirements set forth in DOE Order 473.3A. Therefore, SPOs completed the MLQ based on the aggregate of instructors for that specific training day, which became a limitation of this research.

Upon completion of the MLQ, the researcher collected the surveys and collated them for each training day observed. Again, this was to ensure all data matched with observations of the training day. This helped explain skewness, kurtosis, and/or outliers within the data because of the recorded observations for that specific training day.

Participants

This research project collected data from current protective force personnel from each of the eight NNSA facilities, during a normally scheduled training day. Participant selection was outside the influence of the researcher because site/mission requirements dictated which individuals attend off-post training for each day. Therefore, participants were selected by convenience.

The researcher served as a Senior Security Consultant contracted to the Office of Defense Nuclear Security (DNS) within NNSA. Primary duties in this position included providing assistance and making recommendations for improvement in the areas of protective force operations, training, performance testing, and budgeting. Site visits were conducted numerous times each year for various reasons, which included data collection for other initiatives. Since the researcher was a consultant, there was no authority over any contractor personnel or federal personnel at any site. Also, budget reviews only resulted in recommendations and not actual decisions, which is inherently governmental work. The researcher also coordinated with each site's federal oversight personnel, each site's contractor management, and federal leadership within DNS, prior to any and all site visits.

At the beginning of the training day, the researcher informed the instructors and SPOs of the purpose for the research and reasons for researcher's presence. A brief explanation of the project was given to the SPOs and instructors as well as informing all individuals that a survey would be administered at the conclusion of the training day. This information eased the minds of everyone present and assured all that this research was not an evaluation that could result in negative actions against any student or instructor.

Upon completion of training, the SPOs were sent to a classroom followed by a briefing by the researcher. This briefing, again, explained the purpose of the research and explained that personal data would not be collected, nor would student answers be held against them in any way. The researcher, during survey administration, announced to the SPOs that the MLQ and participation in the research was completely voluntary and anonymous, and that no identifying information about the student or instructor should be listed on the survey. This served two purposes. First, it ensured no repercussions from survey results would happen to any student/participant. Second, and more importantly, it freed the student of any reservations about selecting the most honest and accurate score for any and all items on the MLQ. This was accomplished by reading to the SPOs, verbatim, the script containing directions for completing the MLQ. This approach most certainly increased the number of participants. The exact script used by the researcher may be found in Appendix A. Furthermore, copies of the Institutional Review Board Consent Form (see Appendix B) were provided to all participants.

Research Method and Design

The full range of leadership model presented by Bass and Riggio (2006) contains elements of transformational leadership, transactional leadership, and laissez-faire behavior. The aim of this project was to determine if directional correlations between instructor leadership characteristics and student outcomes exist. Instructors possessed varying magnitudes and combinations of the elements of this model when providing instruction to SPOs within the protective force ranks. However, it should be stated that not all instructors demonstrated all the behaviors within this model during a given observation. The magnitude of each element was examined in an attempt to ascertain the influence each had on student performance and

improvement in the tasks identified for training. Instructors that demonstrated more transformational leadership qualities were more likely to produce better-trained SPOs. This has been demonstrated in earlier similar studies (Bolkan & Goodboy, 2009; Pounder, 2008; Walumbwa et al., 2004).

Method

This was a quantitative study of the relationship between leadership characteristics and student outcomes, which expounded upon previous studies that have been conducted in this field. There are three student outcomes based on this model: SPOs exerting extra effort, perceived effectiveness of the instructor(s), and satisfaction with the instructor(s).

Three types of research methods were available for scholarly research. These methods were quantitative, qualitative, and mixed method, which is a combination of quantitative and qualitative research. This section contains a discussion of each, supported by literature, to substantiate the reasoning behind the selection of one methodology above the others. The reasoning includes information from literature explaining the appropriateness for the specific selection. Additionally, quantitative and qualitative research may contain some aspects of the other in order to better explain the collected data or observations (Creswell, 2014).

Quantitative method. A quantitative method is useful when studying a large population and only a portion of the population may be accessed for sampling (Creswell, 2014).

Quantitative research requires one or more hypothesis or hypotheses and a null hypothesis or hypotheses, which is examined using collected statistical data. Typically, data collection methods include the use of surveys, questionnaires, test scores, or other numerical data, but may also be experimental (Creswell, 2014). Collected data is then analyzed using certain statistical

methods to determine correlations and/or relationships between independent variables, dependent variables or among combinations of multiple variables. The degree to which variables correlate or affect one another may also be shown using this method.

In order to determine the leadership qualities of protective force instructors, a quantitative methodology was used. Additionally, quantitative research using surveys or questionnaires are used when displaying the proportional differences between groups or the distribution of answers to subjective (Rowley, 2014). This methodology also follows the framework of previous research conducted in this field (Arnold & Loughlin, 2013; Bolkan & Goodboy, 2009; Pounder, 2009). Since the purpose of this research was to examine the existence of relationships between leadership characteristics and student outcomes, quantitative research was used (Creswell, 2014).

Qualitative method. This approach to research involves observations of human behavior in order to better understand and explain why something occurs (Creswell, 2014). This method requires the researcher to interpret what is seen during observations. The interpretation is also based on personal experiences of the researcher and information provided through previous research, yet it is situational also (Stake, 2010). The use of observations and interviews are typically used to collect information or data that is then examined to learn more about the problem and purpose of the research. Qualitative research was not appropriate in relation to the problem identified. Narrative research related to one's own experiences would not provide a large enough sample of the population to truly understand and quantify the leadership characteristics of instructors. Therefore, this method was not selected.

Mixed methods. This methodology is a combination of quantitative and qualitative research, as described previously in this section. At the conclusion of data collection for both

methods, the researcher uses both quantitative and qualitative data to enhance understanding of the problem for which the research is based (Creswell, 2014). This method requires the researcher to follow the general guidelines for both quantitative and qualitative research and should not be confused with using, for example, general observations made during administration of surveys or questionnaires when using a quantitative methodology. Since qualitative research would not provide ample data for the problem, the mixed method approach was not selected for this project either.

Research Design

Four designs are available for quantitative research. Those designs are descriptive, correlational, causal-comparative/quasi-experimental, and experimental. Each design was explained and determined to be appropriate for this research project or not.

Descriptive. A descriptive design attempts to describe a phenomenon or occurrence through the use of data collection tools such as surveys and/or observations. None of the data is manipulated; it is simply used to better describe the problem (Chudleigh & Smith, 2015). For the purposes of this research, the variables were already identified and described; therefore, this design was not appropriate.

Correlational. Correlational research provides a description of the variables using numeric values by studying a sample of a population (Creswell, 2014). This design typically uses a survey tool to gather data from a sample of the population and in this case, was focused on leadership characteristics of protective force instructors. Also, this project examined the relationship between leadership characteristics within the full range of leadership model and outcome variables of extra effort, perceptions of instructor effectiveness, and satisfaction with

the instructor. These outcome variables have been studied and found to mediate student performance (Pounder, 2009; Chi & Pan, 2012; Mohammed, Fernando, & Caputi, 2013). Practical training exercises on tasks identified within NNSA's Enterprise Mission Essential Task List (EMETL) served as the conditions set for the survey. EMETL is a list of individual, leader, and collective tasks required to accomplish the protective force mission (National Nuclear Security Administration [NNSA], 2014). Research on the full range of leadership model has been conducted and supports the descriptions of the characteristics originally identified by Bass (1985) in the model of this study. Since this has been completed in other situations, it seemed appropriate to conduct similar correlational research within the NNSA.

Experimental. An experimental design is used to detect a change in dependent variables by varying independent variables (Creswell, 2014). This approach requires additional time to establish a baseline relationship between or among the independent and dependent variables. Once this has been determined, changes to independent variables may be used to determine changes in outcomes or dependent variables. For this research, a baseline relationship among independent and dependent variables must have first been established, but was not. Therefore, an experimental design was not used.

Quasi-experimental. This design is much like an experimental design; however, the participants are not truly randomly selected or assigned (Creswell, 2014). While the participants in this research project were conveniently selected, due to the training roster for each day that is created by each site's leadership, an experimental approach still remained inappropriate because no baseline values for independent or dependent variables were previously established. With this in mind, a quasi-experimental design was not used for this research.

To reiterate, the problem to be addressed was that training has not been effective in producing the real-world performance expected and required by federal law. Identification of current leadership characteristics of protective force instructors explained, in part, why mission performance has not been as effective as possible in the past, because of relationships with student outcomes of extra effort, perceived effectiveness of the instructor, and satisfaction with the instructor. An exploration of instructor leadership characteristics and student performance determined if a linkage among these variables existed and to what extent. Are student outcomes directly related to transformational leadership? Is transformational leadership more influential than transactional leadership and passive-avoidant leadership (*laissez-faire*) when determining student outcomes? Examining the relationship between the full range of leadership model constructs (transformational, transactional, and passive-avoidant) with student outcomes specially answered these questions. Additionally, the relationship between independent variables, which are factors of the full range of leadership model, and student outcomes added an additional layer of depth to the research and identified specific areas in need of improvement.

The research questions and corresponding null and alternative hypotheses are listed below:

*RQ*₁: Are transformational leadership characteristics positively correlated with student outcomes?

*H*₀₁: There is no statistically significant positive correlation between transformational leadership factors of protective force instructors and student outcomes.

*H*_{a1}: There is a statistically significant positive correlation between transformational leadership factors of protective force instructors and student outcomes.

RQ2: Are transactional leadership characteristics positively correlated with student outcomes?

H₀₂: There is no statistically significant positive correlation between transactional leadership factors of protective force instructors and student outcomes.

H_{a2}: There is a statistically significant positive correlation between transactional leadership factors of protective force instructors and student outcomes.

RQ3: Is passive-avoidant leadership negatively correlated with student outcomes?

H₀₃: There is no statistically significant negative correlation between passive-avoidant leadership of protective force instructors and student outcomes.

H_{a3}: There is a statistically significant negative correlation between passive-avoidant leadership of protective force instructors and student outcomes.

The measurement tools for determining if such relationships existed within the framework of off-post training conducted in NNSA were the SPO MLQ, modified MLQ, and instructor MLQ. These questionnaires were administered to students and instructors for a specific training day. The researcher also collected observational notes based on that specific day to include student activities, instructor activities, instructional objectives, training tasks, and duration of training. This anecdotal information helped explain variances in responses among sites.

The resulting scores from each item related to a specific factor (e.g., four items for inspirational motivation, four items for contingent reward) were averaged and then tested for correlations among student outcomes (extra effort, effectiveness, and satisfaction). The scores were also compared to previous research conducted to determine how NNSA scores related to

previous scores. This scoring and averaging approach was used for each questionnaire.

This determined distribution variances, which guided statistical testing methods.

Population and Sampling

This section includes information on the population and sample used for this research project. Specific information on the sampling method, sample size, eligibility criteria, and relevant participant characteristics were discussed. Additionally, sampling techniques were discussed with one technique chosen for this research.

Population

It was important to include requirements for selection to inform the reader of the training each SPO and instructor must successfully complete prior to certification and approval to serve in these positions. In order to become a SPO an individual must successfully complete and graduate from the DOE's Basic Security Police Officer Training (BSPOT) Course or Tactical Response Force 100 (TRF-100). These courses were created and are maintained by DOE's National Training Center (NTC) and require 267-hours or 312.5-hours of training, respectively. These courses include training in topics of firearms, defensive tactics, post and patrol operations, driving, and tactical operations. In addition to these basic courses, SPOs must complete formal annual refresher training designed to maintain the knowledge, skills, and abilities necessary for successful mission performance. This training is delivered by DOE certified firearms instructors. These are the requirements for a SPO to be eligible to participate in this research.

NNSA instructors are required to complete Basic Instructor Training (BIT) and Firearms Instructor Certification (FIC) provided by the NTC. BIT teaches students how to create training by using the Instructional Systems Design Model, which uses an approach to analyze training

needs, design training, develop training, implement training, and evaluate training.

FIC teaches students how to instruct handgun and rifle operations to include safety, weapon manipulations, correcting malfunctions, engaging targets, and weapon maintenance. These are the requirements for an instructor to be eligible to participate in this research.

Sampling

Convenience sampling was used for this research, based upon site requirements for scheduling. This sampling method was chosen because of availability of respondents and ease of access. This method is less random than other sampling methods, but is still considered an option (Creswell, 2014).

First, it was necessary to estimate the variance based on the Likert - type scale used for the MLQ and the number of standard deviations on one side of the mean. In this case, there were five-points on the scale and two standard deviations. Dividing five by two yields an estimated standard deviation of 2.5.

Next, an alpha score of .05 was used to set the level of risk the researcher was willing to accept. The z-score (standard score) associated with this level of risk was 1.96, the acceptable margin of error was set at 5%, and a 5-point scale was used. Therefore, using Cochran's sample size formula for continuous data (Barlett, Kotrlik, & Higgins, 2001), the resulting sample size was 384, where t is the level of risk, s is the estimated standard deviation, and d is the margin of error.

$$n_0 = \frac{(t^2 * s^2)}{d^2}$$

The population of SPOs was 1458 and for instructors was 50. However, in this situation, the sample size number was larger than 5% of the population for both SPOs and instructors. Therefore, a correction formula was used to determine appropriate sample sizes for both populations. Using Cochran's (1977) correction formula, the resulting sample sizes for SPOs equaled 305 and for instructors equaled 45, where p is the population size.

$$n = \frac{n_0}{1 + \frac{n_0}{p}}$$

The sample sizes identified by these calculations provide ample data to determine correlations between the independent and dependent variables. Also, this assisted in comparing the results of this study with similar research conducted using the MLQ. However, based on convenient sampling, the true sample size was not determined until data collection began.

Participation in this research was voluntary, but only SPOs assigned for off-post training were selected. These incumbent SPOs must have already completed BSPOT or TRF-100 and must have been qualified and certified according to 10 CFR 1046 and DOE O 473.3A. Only refresher/maintenance training was observed during this research.

SPOs are required to attend training regularly throughout the course of a year, in accordance with 10 CFR 1046 and DOE O 473.3A. Although sample participants were conveniently selected, they still formed a general representation of the population, based on the experience of the researcher and observations of training conducted. However, true representativeness was not determined or measured.

Data Collection

Instruments

Three instruments were used to collect data from participants. Two instruments were used for SPOs and were the MLQ and modified MLQ. A self-evaluation version of the MLQ was administered to instructors. Additionally, the researcher collected notes of observations based on SPO and instructor activities (e.g., training tasks, amount of time SPOs were engaged in training) throughout the training day.

Multifactor leadership questionnaire (MLQ). The multifactor leadership questionnaire (MLQ) is the most widely used tool for identifying leadership behaviors (transformational, transactional, and passive-avoidant) of individuals in a leadership role (Hemsworth et al., 2013; Keung & Rockinson-Szapkiw, 2013) and has been used in both public and private organizations. Bass and Avolio first created the MLQ in 1990. Not only did the survey tool examine each factor within the full range of leadership model, it also measured outcomes of the leader's effectiveness, the leader's ability to inspire subordinates to use extra effort, and satisfaction with the leader. This tool has been modified over time, and the MLQ (Form 5X), which is published by Mindgarden Incorporated, was used for data collection. This tool contains 36 items related to leadership factors (four items per factor) and an additional nine items related to student outcomes, which previous studies have found to be linked with higher levels of individual and organizational performance (Bass & Avolio, 2004). The four items used for each factor have been examined to determine and ensure high levels of inter-correlation among the others but very low levels of correlation (multicollinearity) with items used for the

other eight characteristics (Bass & Avolio, 2004). This ensured, as best as possible, that each item related to only one leadership characteristic (factor) and not multiple characteristics.

Each item on the questionnaire was scored using a Likert-type scale. This scale used the following description: 0 – “Not at all”, 1 – “Once in a while”, 2 – “Sometimes”, 3 – “Fairly often”, and 4 – “Frequently, if not always.” Participants were asked to complete the questionnaire based on the training conducted only on that day and on the instructor(s) present. If a participant did not know an answer or understand an item, he/she was instructed to leave that item blank. The researcher also explained the purpose of the research, that the questionnaire was completely anonymous, the amount of time required to complete the questionnaire, that participation in the research was voluntary, an estimated time for the research project to be completed, and the contact information of the researcher (Rowley, 2014).

The scores for the four items related to a single leadership characteristic were averaged to determine an overall rating for each specific characteristic. These averages were then compared to the results from previous research to ascertain a percentile score. Even though this research was conducted in a new organization, the use of the MLQ has been shown to be applicable regardless of industry or culture (Bass, 1997).

Over the past two decades, the MLQ has been studied and examined for validity and reliability. Antonakis, Avolio, and Sivasubramaniam (2003) conducted a meta-analysis of existing published and unpublished research data from many different sources. There were also two parts to the meta-analysis. First, the MLQ was tested at the item level and, second, the researchers used factor-level data in order to replicate the results of the first part and to analyze

the remaining contextual factors (Antonakis et al., 2003). Based on the results of the analysis validity and reliability of the MLQ indicate this tool is suitable for use in examination of the full range of leadership model and theory (Antonakis et al., 2003). In other words, the tool accurately measured the leadership behaviors in the full range of leadership model consistently among various organizations. However, when collecting data, researchers should use similar situations because samples from different organizations may produce inconsistent results from multidimensionality tests (Antonakis et al., 2003).

Another study was conducted to examine the validity and reliability of transformational leadership characteristics at the item and construct level. Hemsworth, Muterera, and Baregheh (2013) found high levels of internal consistency among transformational leadership items using Cronbach's alpha test. Also, a discriminatory analysis was completed using confirmatory factor analysis, which yielded high levels of validity for each transformational leadership characteristic (Hemsworth et al., 2013).

Sample Items. The MLQ contained 36 standardized items designed to assess each of the nine leadership characteristics associated with the full range of leadership model. Each of the nine characteristic factors were defined by four items within the MLQ. There were an additional nine items intended to measure student outcomes (Bass & Riggio, 2006). Leadership characteristics from individualized influence to laissez-faire were independent variables while student outcomes were dependent variables.

Confirmatory factor analysis was conducted on the MLQ (Form 5X) by Avolio and Bass (2004). Using LISREL, Avolio and Bass evaluated the items and constructs of the MLQ using the Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Root Mean Squared

Residual (RMSR), Normed Fit Index (NFI), and Tucker-Lewis Index (TLI). The results of this analysis provided confidence in the validity and reliability with regard to items and constructs (Avolio & Bass, 2004). Rate-rerate testing was also conducted by Bass (1996) and high correlations were found, thereby indicating scores from the MLQ are predictive of future ratings.

Modified MLQ

Mindgarden, Incorporated copyrighted the MLQ. The use of this product required its permission (along with a fee) and any modification made to the questionnaire had to be submitted to Mindgarden Inc. for review and approval. This approval is located in Appendix C. Since the MLQ has been shown useful in a number of various industries and cultures, Mindgarden Inc. rejected the requests for modifications to certain items. However, Mindgarden Inc. did approve administration of modified items only after all SPOs have completed the standard MLQ.

Modifications for protective force training. Certain items contained in the standard MLQ, while suitable for this type of environment, were modified in an attempt to enhance student understanding and provide more accurate results. Pounder (2008) took a similar approach for use in a university setting. Pounder modified many of the original MLQ items to better represent a classroom setting. Other university colleagues reviewed the modifications and a factor analysis was conducted to determine goodness-of-fit with the modified instrument. In other words, the modified items produced the same results that the original MLQ would produce. However, in this study the validity and reliability of each item modified for protective force training was not completed due to the limited amount of responses and lack of available experts

in this field of study. Yet the data collect from the modified items were examined.

Unfortunately, the results of which were not used to draw conclusions on relationships among the full range of leadership model and student outcomes. Sample items of the modified MLQ may be found in Appendix D.

Some of the modified items generated scores different from the original MLQ, which could lead to additional research. It is clear, however, that the modifications to the MLQ are visibly more aligned with protective force training than the original MLQ but may also skew the data and make a comparison with previous research and findings difficult. Cronbach's alpha (Cronbach, 1951) was used on modified items to check for internal consistency-reliability. Warrens (2015) posited items may be removed from a questionnaire to increase the resulting alpha value but still maintain fidelity with overall results. For this reason, only the modified items were presented to SPOs and not another complete MLQ with only certain items replaced.

Confirmatory factor analysis was conducted to determine if the factor structure was replicated with the modified items. Additionally, scores of respective items from the original MLQ and the modified MLQ were examined and analyzed for any changes and to determine if the respective instructor behavior is better defined by original or modified items. However, sample sizes were too small and internal consistency was not achievable.

Threats to validity. Data was collected from eight different NNSA sites. Therefore, instructors and training tasks were different based on needs identified at each site. Training consisted of instruction, deliberate practice, or some combination of the two. SPOs reacted differently to the training tasks and this affected or influenced questionnaire responses, which threaten the internal validity of the data (Creswell, 2014). To account for this possibility, the

research observed each day's training in order to better explain variances in responses between sites. To enhance reliability of the data, the same researcher conducted introductions to the SPOs and instructors as well as read instructions for completion of the questionnaires in the same manner during each training day. This approach, at least, minimized researcher differences, which could have influenced student responses.

Data Collection Technique

SPOs and instructors completed the MLQ and then the modified MLQ (for SPOs only) at the conclusion of training for each day. This helped identify leadership characteristics, student willingness to exert extra effort, student perceptions of instructor effectiveness, and satisfaction with the instructor(s). Likert-type scales were used on the questionnaires for all items. Also, the researcher collected anecdotal notes in order to account for data anomalies and/or differences between sites.

At the beginning of the training day, the researcher introduced himself to the participants (SPOs and instructors) to explain the purpose of the research and that questionnaires would be administered upon the completion of training. The researcher also indicated that all questionnaires were completely anonymous, which eased student and instructor concerns about researcher presence. Upon completion of training, the researcher read the script of instructions to the participants and reiterated the questionnaires are completely anonymous and participation in this research is completely voluntary. The researcher also provided participants with a copy of the consent form (see Appendix B) and remained in the room while participants completed the questionnaires (Rowley, 2014). Only SPOs complete the modified MLQ because the modified items were written specifically for their perspective. Completed questionnaire were collected by

student in order to examine differences between original items and modified items from the same student.

Data Organization Techniques

Completed questionnaires were collected by the researcher, grouped by student, instructor, and site. This aided in comparing results between SPOs, instructors, and sites. Hard copies of the questionnaires will remain in a locked container for a minimum of three years, at which time they will be shredded and destroyed (Burke, 1996).

Results and scores from the questionnaires were entered into a Microsoft Excel workbook and IBM SPSS for data analysis. The computer was and remains password protected to ensure results are not available to anyone but the researcher. Just as with the hard copies, the data was organized by site and by student to assist with comparisons. This data will be maintained for three years after completion at which time it will be deleted (Burke, 1996).

The researcher maintained notes and observations about each training day, which assisted in answering questions that arose from differences in data between SPOs, instructors, and/or sites. The notes collected by the researcher were secured in a locked container and will be maintained for three years. These notes will then be shredded and destroyed to prevent unauthorized access to the information collected.

In addition to observations of training, the researcher annotated the number of instructors, the number of SPOs, and time engaged, which included active physical participation, active discussions, listening, preparing for training, taking breaks, eating lunch, and/or waiting in line for his/her opportunity to participate in the training event. Also, training goals and objectives (purpose and desired outcomes) were observed by the researcher in order to understand the

reasons for each training evolution, which helped explain differences in data between SPOs, instructors, and/or sites.

Data Analysis Technique

Analysis of the data provided answers to the hypotheses and identified correlations between constructs and factors of the full range of leadership model and student outcomes. Correlational analysis was the main method used to test each hypothesis, but other data analysis methods were used to further examine the data.

Descriptive statistics were obtained from the data using Microsoft Excel's Data Analysis ToolPak and IBM's SPSS. The results helped determine data distribution, which determine parametric and nonparametric testing approached used during analysis. Testing used to analyze the data were correlation analysis, analysis of variances, post hoc testing, and regression analysis. An analysis of data from each site was conducted in addition to an overall analysis of aggregated data.

Correlational analysis was used to determine relationships between each independent leadership variable and each dependent variable of student outcomes. The specific test used was Spearman's (*rho*) rank correlation test. The results of this test range from -1 to 1 as a coefficient that represents the linear relationship, or dependence, between two variables. A positive number indicates a direct relationship, while a negative number represents an indirect relationship, based on the median of the data, not the mean. The greater the absolute value of this coefficient represents the strength of the relationship where 1 equals a perfect relationship and 0 indicates no relationship between the variables exists.

Factorial analysis was used to examine the items within the modified MLQ to determine if each item was correlated to a specific factor, in this case, leadership characteristics. Similarly, Pounder (2009) used confirmatory factorial analysis to examine a modified MLQ designed for students and teachers. His analysis assessed the reliability of the modified items that were examined and deemed acceptable by other subject matter experts, which ultimately led to Pounder's data being used in his research. The analysis for Pounder (2009) indicated his modified items were reliable and items loaded together for each factor they were designed to assess. The same approach was used for the modified MLQ in this study.

Reliability and Validity

Reliability of a study means the study can be replicated at other locations or by other researchers and the same or similar results emerge. Validity means the research and tools measure what they are supposed to and are related to hypotheses. Both reliability and validity are necessary for research to be accepted by the research community.

Reliability

Data collection occurred at eight different sites. Therefore, it was critical that the researcher conduct data collection in the same manner at each location. This minimized researcher influence on SPOs and instructors while completing the MLQ. Using the detailed description presented previously, any researcher would be able to replicate this project and obtain similar results within NNSA protective forces.

Each of the hypotheses are one-tailed, meaning they are directional and examine the correlation, either positive or negative, between constructs of the full range of leadership model and student outcomes. Additionally, each hypothesis was testable, using the MLQ as the basis

for data collection. Based on previous research (Hemsworth et al., 2013; Pounder, 2009; Walumbwa et al., 2004; Walumbwa et al., 2008) these hypotheses were able to be answered by analysis of the data.

In order to determine reliability of the data from the modified MLQ, Cronbach's alpha (Cronbach, 1951) was used to check for internal consistency and reliability, with an expected value greater than .60, which is commonly accepted for social science research (Anastasi, 1990). This analysis was conducted at the construct level (transformational, transactional, and passive-avoidant), the factor level (e.g., IS, IM, CR), and at the item level for the modified MLQ. This approach provided insight on the data collected from this instrument. Additionally, data among sites were compared to identify any possible outliers or major differences in the data set.

Validity

The researcher was required to visit eight different sites to collect data. Each site has a similar mission for the protective force, which translated into a largely homogeneous population. Antonakis et al. (2003) found that nonhomogeneous samples are likely to generate varying results that may not appear valid. Therefore, the samples at each site needed to be homogeneous during data collection.

Bass and Avolio (2004) conducted confirmatory factor analysis (CFA) on data collected from 3,755 self-rated MLQs and 12,118 subordinate MLQs. The results for instructor and student values, respectively were: Goodness of fit index – 0.93 and 0.91; Adjusted goodness of fit index - 0.91 and 0.90; Comparative fit index - 0.89 and 0.91; and, Root mean squared error of approximation - 0.05 and 0.05. This indicates the data fits well within the model. The statistical significance level was set at 5% for one-tailed tests with a confidence level, p , set at .05. These

values were used when conducting CFA on items for convergent validity, discriminant validity, and concurrent validity (Hemsworth et al., 2013).

Samples at each site were conveniently selected, which did not jeopardize external validity. However, during off-post training, each SPO received instruction and practice related to job requirements during each training evolution. Therefore, it was reasonable to believe the samples were reflective of the population and generalizable for each individual site.

Transition and Summary

This section described the methodology and design, population and sampling, data collection, data analysis, and reliability and validity of this research project. This approach was appropriate to determine directional correlations between constructs of the full range of leadership model and student outcomes. Careful consideration for each step in the research process was given to maximize validity and reliability so the results of the project can be accepted by fellow researchers.

The next section discusses, in detail, data analysis results, correlations, variance analysis, and confidence in the data. More importantly, because this was an applied research project and focused on an actual problem, recommendations were made to solve the identified problem with specific actions that can be undertaken for each site or all sites. Additionally, recommendations for further study were made, which should provide NNSA with other options to enhance mission performance of the protective forces.

Section 3: Application to Professional Practice and Implications for Change

This section contains an examination of collected data to include statistical analyses conducted. The results of the analyses provided evidence to support conclusions for each hypothesis and research question. Based on the findings, recommendations for change were made to specifically address the problem identified and the purpose of this research. Application for instructors within NNSA's protective forces were also discussed, along with potential future actions and research. Lastly, reflections of the entire research process were included in this section that should help future researchers benefit from some of the challenges faced during this research project.

Overview of Study

The results of several governmental reports (U.S. Department of Energy, Office of Inspector General, Office of Inspections and Special Inquiries, 2005; U.S. Department of Energy, Office of Inspector General, Office of Audit Services, 2010; U.S. Department of Energy, Office of Inspector General, Office of Audits and Inspections, 2012; U.S. Government Accountability Office, 2010), stated that mission performance of protective forces at NNSA sites needed improvement. Since performance begins with training it seemed reasonable to analyze off-post maintenance training at NNSA facilities to identify options for improvement. While completing a concept paper for this project, it became abundantly clear that leadership of instructors affects, both positively and negatively, student performance. Therefore, the logical step was to examine instructor leadership characteristics and student outcomes to identify correlations among variables.

Using the full range of leadership model (Bass, 1985) seemed to be a great fit for the construct of the project because it examines the complete spectrum of leadership, from effective to non-effective. Additionally, use of the MLQ, a questionnaire that had already been tested for validity and reliability, was a good fit for the framework of this research. The MLQ examines the constructs of the full range of leadership model (transformational leadership, transactional leadership, and passive-avoidant leadership), factors of the model (e.g., idealized influence, contingent reward, management-by-exception), and student outcomes (extra effort, perceived effectiveness of the instructor, and satisfaction with the instructor).

After completing data analysis, positive correlations existed between transformational leadership at the construct and factor level and all three student outcomes. A positive, but weaker, correlation existed between transactional leadership and student outcomes, but only contingent reward was significant. Lastly, passive-avoidant leadership was found to have a negative correlation to all three student outcomes.

Presentation of the Findings

This research took place at eight separate sites within the Nuclear Security Enterprise (NSE) inside the United States. Each site conducted similar security operations and off-post tactical training. Examples of training tasks included live-fire close quarters battle, team movement, weapons training, defensive tactics, breaching, force-on-force exercises, and suspect control. Each site, however, had a different geographic layout (i.e., larger site boundary), which required varying protective force personnel staffing levels for site protection, which influenced the number of SPOs that attended training during data collection. As such, the number of SPOs

attending training and the number of instructors varied across sites, which is represented in Table 1.

Table 1

Number of SPO and Instructor Respondents During Off-Post Training

<u>Site</u>	<u>SPOs in training</u>	<u>Instructors</u>
1	6	2
2	12	5
3	12	4
4	20	3
5	15	3
6	7	1
7	11	3
8	15	9
Total	98	30

Although the goal for sampling was to obtain 305 SPO respondents and 45 instructor respondents, only 98 SPOs and 30 instructors were available due to convenience sampling, which was limited by mission requirements and availability of personnel at each site. Therefore, 95% confidence level yielded a 9.6% margin of error for SPOs and 11.9% margin of error for instructors. Even with a 90% confidence level, the margin of error for SPOs was 8.04% and 9.8% for instructors. This is important to keep in mind while reviewing results from data analysis.

Descriptive Statistics

Table 2 shows the descriptive statistics for SPO respondents for the MLQ ($N=98$). Skewness and kurtosis values have been included for determination of normal distribution and

were found to be within the acceptable range of $[-2.0]$ and $[9.0]$, respectively for the SPO MLQ and modified MLQ (Schmider, Ziegler, Danay, Beyer, & Bühner, 2010). However, management-by-exception (passive) and laissez-faire had skewness of -2.061 and -2.245 , which fall outside the recommended range. It appears, from these values, the data are not normally distributed and may require additional normality testing and the use of nonparametric tests. Table 3 shows the descriptive statistics for the modified MLQ and Table 4 shows the descriptive statistics for the instructor MLQ responses.

However, these data do fall within the range of results from previous research conducted by Beauchamp et al. (2014) and tend to follow the same general pattern of skewness and kurtosis. This indicates the data are congruent with previous results and may, therefore, be compared with similar research using the MLQ.

Table 2

Descriptive Statistics for SPO MLQ

	<i>N</i>	<i>Range</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SE</i>	<i>SD</i>	<i>s</i> ²	<i>Skew</i>	<i>SE</i>	<i>Kurtosis</i>	<i>SE</i>
II(A)	98	2.50	1.50	4.00	3.14	0.06	0.60	0.36	-0.27	0.24	-0.60	0.48
II(B)	98	2.75	1.25	4.00	3.06	0.07	0.68	0.47	-0.27	0.24	-0.82	0.48
IM	98	2.25	1.75	4.00	3.18	0.06	0.64	0.41	-0.46	0.24	-0.57	0.48
IS	98	2.50	1.50	4.00	3.16	0.06	0.64	0.41	-0.40	0.24	-0.52	0.48
IC	98	3.25	.75	4.00	3.02	0.07	0.66	0.43	-0.48	0.24	0.55	0.48
CR	98	2.00	2.00	4.00	3.28	0.06	0.62	0.38	-0.43	0.24	-0.95	0.48
MBEA	98	3.50	.50	4.00	2.49	0.09	0.91	0.83	-0.16	0.24	-0.82	0.48
MBEP	98	4.00	.00	4.00	1.11	0.08	0.84	0.71	0.83	0.24	0.63	0.48
LF	98	3.25	.00	3.25	.63	0.08	0.75	0.57	1.50	0.24	2.12	0.48
EE	98	3.00	1.00	4.00	3.24	0.07	0.67	0.45	-0.63	0.24	-0.01	0.48
EFF	98	2.75	1.25	4.00	3.38	0.06	0.56	0.32	-0.75	0.24	0.57	0.48
SAT	98	2.50	1.50	4.00	3.45	0.06	0.60	0.36	-1.13	0.24	1.12	0.48

Note. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = satisfaction.

Table 3

Descriptive Statistics for Modified MLQ

	<i>N^a</i>	<i>Range</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SE</i>	<i>SD</i>	<i>s²</i>	<i>Skew</i>	<i>SE</i>	<i>Kurtosis</i>	<i>SE</i>
II(A)	78	2.25	1.75	4.00	3.16	0.07	0.61	0.37	-0.21	0.27	-0.86	0.54
II(B)	78	2.75	1.25	4.00	3.13	0.07	0.66	0.44	-0.30	0.27	-0.62	0.54
IM	78	2.25	1.75	4.00	3.17	0.07	0.62	0.39	-0.24	0.27	-0.84	0.54
IS	78	2.50	1.50	4.00	3.18	0.08	0.67	0.45	-0.46	0.27	-0.64	0.54
IC	78	3.25	.75	4.00	2.74	0.09	0.79	0.62	-0.32	0.27	-0.15	0.54
CR	78	2.00	2.00	4.00	3.27	0.07	0.63	0.39	-0.41	0.27	-0.97	0.54
MBEA	78	2.75	1.25	4.00	2.87	0.08	0.70	0.49	-0.19	0.27	-0.68	0.54
MBEP	78	3.50	.00	3.50	1.57	0.09	0.83	0.69	0.05	0.27	-0.64	0.54
LF	78	3.00	.00	3.00	.65	0.08	0.75	0.56	1.28	0.27	1.24	0.54
EE	78	3.00	1.00	4.00	3.27	0.07	0.63	0.40	-0.67	0.27	0.61	0.54
EFF	78	2.50	1.50	4.00	3.38	0.07	0.59	0.35	-0.73	0.27	-0.12	0.54
SAT	78	3.00	1.00	4.00	3.54	0.07	0.63	0.40	-1.69	0.27	3.37	0.54

Note. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = Satisfaction.

^a Some respondent results were not included due to missing data/incomplete responses.

Table 4

Descriptive Statistics for Instructor MLQ

	<i>N</i>	<i>Range</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SE</i>	<i>SD</i>	<i>s</i> ²	<i>Skew</i>	<i>SE</i>	<i>Kurtosis</i>	<i>SE</i>
II(A)	30	2.50	1.50	4.00	3.05	0.12	0.67	0.45	-0.52	0.43	-0.41	0.83
II(B)	30	2.00	2.00	4.00	3.13	0.10	0.56	0.32	-0.14	0.43	-0.79	0.83
IM	30	2.50	1.50	4.00	3.05	0.13	0.73	0.54	-0.57	0.43	-0.84	0.83
IS	30	2.25	1.75	4.00	3.03	0.11	0.62	0.38	-0.45	0.43	-0.32	0.83
IC	30	1.75	2.25	4.00	3.37	0.09	0.50	0.25	-0.42	0.43	-0.55	0.83
CR	30	2.00	2.00	4.00	3.08	0.10	0.53	0.28	-0.24	0.43	-0.84	0.83
MBEA	30	2.75	1.00	3.75	2.47	0.15	0.84	0.70	-0.54	0.43	-0.73	0.83
MBEP	30	2.75	.00	2.75	.77	0.10	0.52	0.28	2.06	0.43	6.48	0.83
LF	30	3.00	.00	3.00	.48	0.12	0.66	0.43	2.24	0.43	6.56	0.83
EE	30	2.33	1.67	4.00	3.23	0.10	0.56	0.32	-0.93	0.43	1.24	0.83
EFF	30	1.75	2.25	4.00	3.39	0.09	0.48	0.23	-0.48	0.43	-0.56	0.83
SAT	30	1.50	2.50	4.00	3.52	0.08	0.46	0.22	-0.62	0.43	-0.44	0.83

Note. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = Satisfaction.

Based on a review of SPO MLQ descriptive statistics by site, site 2 appeared to have differences with sites 3 and 8, which is shown in Table 5. Specifically, differences between site 2 ($M = 3.65$, $Mdn = 3.75$, $SD = 0.419$) and site 3 ($M = 2.92$, $Mdn = 3$, $SD = 0.444$) are most likely attributed to the means. However, during observations conducted at the sites, the content of the day's training may have influenced these scores. Site 2 spent the majority of the day working on tactical problems related directly to the site's mission, while site 3 spent time practicing skills that are normally not used or viewed as critical to mission performance. These factors may have influenced SPO perceptions of the instructor and thereby influencing the ratings. Also, site 8 focused primarily on individual skills instead of collective tasks related to mission requirements.

As for the instructor comparisons between sites, shown in Table 6, site 2 and 8 were different for the individualized consideration factor. Site 2 ($M = 2.75$, $Mdn = 2.75$, $SD = 0.250$) had a minimum value of 2.5 and a maximum value of 3. Comparatively, site 8 ($M = 3.64$, $Mdn = 3.50$, $SD = 0.283$) had a minimum score of 3.25 and a maximum score of 4.0. Again, based on observations conducted during data collection, this is most likely based on the tasks trained. Site 8 conducted training that focused on individual performance and each instructor had an opportunity to work with each student, however, this was not the case at site 2 in which collective, team operations were the focus of the instructors instead of working with individuals, one-on-one.

Table 5

Descriptive Statistics Idealized Influence (Attributed) SPO MLQ

			<i>M</i>	<i>Mdn</i>	<i>Mode</i>	<i>Min</i>	<i>Max</i>	<i>SD</i>	<i>s</i> ²
II(A)	Site	1	2.96	2.75	2.50 ^a	2.50	3.75	0.534	0.285
		2	3.65	3.75	4.00	3.00	4.00	0.419	0.176
		3	2.92	3.00	3.00	2.00	3.50	0.444	0.197
		4	3.19	3.13	3.00	2.00	4.00	0.581	0.338
		5	3.10	3.25	3.25	2.00	4.00	0.549	0.302
		6	3.11	3.25	2.50	2.25	4.00	0.690	0.476
		7	3.42	3.50	4.00	2.67	4.00	0.513	0.263
		8	2.80	2.75	2.50	1.50	4.00	0.708	0.502

a. Multiple modes exist. The smallest value is shown

Table 6

Descriptive Statistics Individualized Consideration Instructor MLQ

			<i>M</i>	<i>Mdn</i>	<i>Mode</i>	<i>Min</i>	<i>Max</i>	<i>SD</i>	<i>s</i> ²
IC	Site	1	3.00	3.00	2.75 ^a	2.75	3.25	0.354	0.125
		2	2.75	2.75	2.50 ^a	2.50	3.00	0.250	0.063
		3	3.31	3.38	3.50	3.00	3.50	0.239	0.057
		4	3.83	3.75	3.75	3.75	4.00	0.144	0.021
		5	3.17	3.25	2.25 ^a	2.25	4.00	0.878	0.771
		7	3.75	4.00	4.00	3.25	4.00	0.433	0.188
		8	3.64	3.50	3.50	3.25	4.00	0.283	0.080

a. Multiple modes exist. The smallest value is shown

Data Percentiles

Table 7 compares the average scores of all respondents from this project against the average scores reported by Avolio and Bass (2004). This comparison yields a percentile from previous research conducted using the MLQ within the United States. SPO MLQ scores and modified MLQ scores were compared with previous individual scores and percentiles based on lower level ratings ($N = 12,118$), while instructor MLQ scores were compared with individual scores based on self-ratings ($N = 3,755$). Transformational leadership scores for the SPO and instructor MLQ fell within the middle percentiles, which indicates improvements can be made. Also, the data shows higher levels in the less effective factors of management-by-exception (active and passive) along with laissez-faire. This is another area that could be improved upon in the future.

Interestingly, instructors rated themselves lower than SPOs in contingent reward, management-by-exception (active), and laissez-faire and higher in all three outcomes, extra effort, effectiveness, and perceived. This indicates a disconnect between instructor and student realities (i.e., instructors believe they do a better job instructing than SPOs believe). However, instructors rated themselves lower than SPOs in all but one transformational factor, which was intellectual stimulation.

Table 7

Comparison of Average Scores and Percentiles from MLQ Manual (Avolio & Bass, 2004)

	SPO MLQ		Modified MLQ		Instructor MLQ	
	Average	Percentile	Average	Percentile	Average	Percentile
II(A)	3.14	60	3.16	60	3.05	50
II(B)	3.06	60	3.13	70	3.13	50
IM	3.18	60	3.17	60	3.05	50
IS	3.16	70	3.18	70	3.03	50
IC	3.02	50	2.74	40	3.37	60
CR	3.28	70	3.27	70	3.08	50
MBEA	2.49	80	2.87	90	2.47	80
MBEP	1.11	60	1.57	80	0.77	30
LF	0.63	60	0.65	60	0.48	40
EE	3.24	70	3.27	70	3.23	80
EFF	3.38	60	3.38	60	3.39	70
SAT	3.45	50	3.54	60	3.52	80

Note. SPO scores were compared with percentiles for individual scores based on lower level ratings within the US. Instructor scores were compared with percentiles for individual scores based on self-ratings in the US. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-

Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = Satisfaction.

Internal Consistency and Reliability

In order to check for internal consistency and reliability among items used for each factor and construct for the modified MLQ, Cronbach's alpha test was used (Cronbach, 1951). Items with an alpha value greater than .70 are considered acceptable and therefore support the higher-level factor or construct (Tavakol & Reg, 2011). Previous research conducted by Avolio & Bass (2004) have shown internal consistency exceeded Cronbach's alpha value of .70.

Factor analysis of the modified MLQ was conducted using the data collected for this project, shown in Table 8. There were five factors with alpha levels below the recommended .70 level [idealized influence (attributed), individualized consideration, management-by-exception (active), management-by-exception (passive), and extra effort]. Low alpha levels and small sample sizes resulted in data from the modified MLQ that was unreliable.

After examining Cronbach's alpha at the transformational and transactional construct levels, as shown in Table 9, for each questionnaire it appears the factors that support transformational leadership load extremely well together with alpha scores of .90 for the SPO MLQ, .89 for the modified MLQ, and .88 for the instructor MLQ. However, transactional leadership factors (CR, MBEA, and MBEP) did not load well under this construct with values of .02, .26, and .33 for each respective questionnaire. This was most likely due to the differences between contingent reward and management-by-exception. Some have even argued that contingent reward loads better with transformational leadership than it does with transactional leadership (Pounder, 2008), which appeared to be the case with this data.

Table 8

Cronbach's Alpha for Each Factor from Modified MLQ

Factor	Cronbach's Alpha (α)
II(A)	.65
II(B)	.71
IM	.76
IS	.77
IC	.62
CR	.77
MBEA	.59
MBEP	.53
LF	.72
EE	.69
EFF	.82
SAT	.91

Note. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = Satisfaction.

Table 9

Cronbach's Alpha for Each Factor from Each Questionnaire

Questionnaire	Cronbach's Alpha (α)	
	Transformational	Transactional
SPO MLQ	.90	.02
Modified MLQ	.89	.26
Instructor MLQ	.88	.33

Validity

To test for validity of the modified MLQ, SPSS was used. Factorial analysis was performed on the transformational factors but the components extracted did not show similar loading between like items. In other words, items used to support transformational leadership factors [e.g., II(A), II(B), IM] did not load together. The same held true for transactional leadership factors. Therefore, this instrument had neither convergent nor discriminant validity. Due to these results, it was reasonable to eliminate the use of the modified MLQ from the remainder of the project.

Tests for Normal Distribution

To test the data for normal distributions, SPSS was again used. Table 10 shows the results from the SPO MLQ and Table 11 shows the results from the instructor MLQ. The tests used were the Kolmogorov-Smirnov and Shapiro-Wilk tests, in which a significance level of .05 or below indicated the data did not follow a normal distribution. The results of these tests revealed the data, in fact, did not follow a normal distribution. This was also shown by

histograms of each factor. Figures 1, 2, and 3, show the distribution for outcomes, which are all visually skewed.

Figure 1.

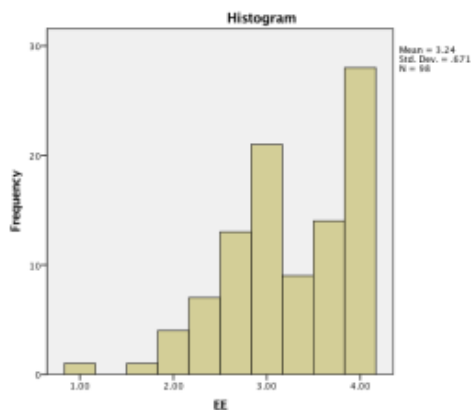


Figure 1. SPO MLQ Histogram – Extra Effort. This histogram shows the skewness of the distribution for extra effort from the SPO MLQ, with a mode of 4.

Figure 2.

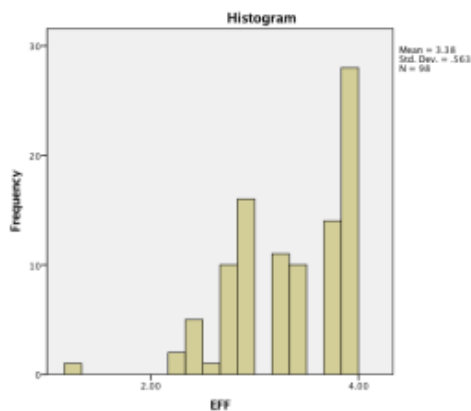


Figure 2. SPO MLQ Histogram – Effectiveness. This histogram shows the skewness of the distribution for effectiveness from the SPO MLQ.

Figure 3.

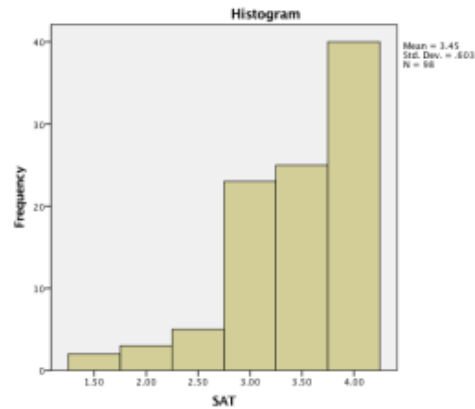


Figure 3. SPO MLQ Histogram – Satisfaction. This histogram shows the skewness of the distribution for satisfaction from the SPO MLQ.

Additional histograms are located in Appendix E. Based on these results, it was necessary to use nonparametric tests for the remainder of the statistical analysis performed. Even though some of the data, particularly from the instructor MLQ, appeared to follow a normal distribution under some factors, the use of nonparametric tests was still used because of a smaller sample size as compared to the population and also to lessen the effect of extreme values.

Table 10

Normal Distribution Test for SPO MLQ

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	<i>df</i>	Sig.	Statistic	<i>df</i>	Sig.
II(A)	.12	98	.001	.95	98	.001
II(B)	.12	98	.003	.94	98	.000
IM	.12	98	.003	.93	98	.000
IS	.10	98	.014	.94	98	.000
IC	.13	98	.000	.94	98	.000
CR	.14	98	.000	.91	98	.000
MBEA	.10	98	.022	.97	98	.016
MBEP	.16	98	.000	.94	98	.000
LF	.20	98	.000	.81	98	.000
EE	.16	98	.000	.90	98	.000
EFF	.17	98	.000	.89	98	.000
SAT	.23	98	.000	.82	98	.000

Note. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = Satisfaction.

^aLilliefors Significance Correction.

Table 11

Normal Distribution Test for Instructor MLQ

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	<i>df</i>	Sig.	Statistic	<i>df</i>	Sig.
II(A)	.15	30	.084	.94	30	.105
II(B)	.12	30	.200*	.95	30	.211
IM	.16	30	.040	.92	30	.028
IS	.15	30	.081	.95	30	.188
IC	.14	30	.151	.93	30	.039
CR	.15	30	.074	.96	30	.249
MBEA	.17	30	.029	.91	30	.019
MBEP	.28	30	.000	.79	30	.000
LF	.23	30	.000	.74	30	.000
EE	.21	30	.002	.90	30	.010
EFF	.21	30	.002	.91	30	.014
SAT	.22	30	.001	.84	30	.000

Note. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = Satisfaction.

^aLilliefors Significance Correction.

*This is a lower bound of the true significance.

Outliers

SPSS was used to identify outliers in the data from both the SPO MLQ and the instructor MLQ. By using the command 'Identify Unusual Cases,' two outliers were identified in the SPO MLQ (Yang & Zeng, 2014). Both outliers were from different sites, but had different reasons

for being outliers. The first outlier was identified because of the score for effectiveness and the second outlier was due to perceived. However, because the remainder of the data for these respondents fell within normal ranges and because nonparametric tests were performed, the data from these individuals was not eliminated from the overall data set. No outliers were found in the instructor MLQ data.

Correlations

To compare the relationship among the full range of leadership model factors and student outcomes, Spearman's rank correlation coefficient, or Spearman's *rho*, was used because of the non-normal distribution of the data. This test ranks data for both the independent and dependent variables, then analyzes the relationship between the two variable ranks (Sedgwick, 2014). Table 12 shows the correlations from the SPO MLQ and Table 13 shows the correlations from the instructor MLQ. Spearman's *rho* coefficients have a value between -1.0 and 1.0. Negative values indicate an inverse correlation while positive values indicate a direct correlation. As these values increase, either positively or negatively, the strength of the correlation increases.

SPO MLQ. The vast majority of transformational leadership characteristics and student outcomes showed moderate to strong correlations based on results from the SPO MLQ, which were significant at the .01 level (one-tailed). Only idealized influence (behavior) had little positive correlation with the outcomes; $r_s(96) = .22, p = .05$ with extra effort and $r_s(96) = .17, p = .05$ with satisfaction. At the high end of transformational leadership factors and statistical significance, inspirational motivation was found to be positively correlated with effectiveness with $r_s(96) = .76, p = .01$. The lowest statistically significant positive correlation at the .01 level (one-tailed) was between individualized consideration and satisfaction with $r_s(96) = .45, p = .01$.

The remainder of the factors had statistically significant positive correlations with student outcomes. Therefore, these results reject the null hypotheses (H_{01}) that stated there is no statistically significant positive correlation between transformational leadership factors of protective force instructors and student outcomes.

The transactional leadership construct had similar results as transformational factors for contingent reward with $r_s(96) = .64, p = .01$ for extra effort, $r_s(96) = .67, p = .01$ for effectiveness, and $r_s(96) = .59, p = .01$ for satisfaction, all were one-tailed. However, management-by-exception (active) was found to have no statistically significant correlation with any of the outcomes, yet management-by-exception (passive) had weak negative correlations with extra effort [$r_s(96) = -.19, p = .05$], effectiveness [$r_s(96) = -.26, p = .01$], and satisfaction [$r_s(96) = -.26, p = .01$]. This shows that contingent reward seems to be more closely related to transformational leadership characteristic correlations with outcomes rather than management-by-exception, which was mentioned earlier. When considering all factors of transactional leadership, the results of this study fail to reject the null hypotheses (H_{02}) because of the different correlational directions and statistical significance with all three factors. However, these types of results have been found before by Pounder (2008), which he found contingent reward to load more with transformational leadership than with transactional.

Passive-avoidant, or laissez-faire, behaviors were negatively and statistically significantly correlated with student outcomes with coefficients of $r_s(96) = -.37, p = .01$, $r_s(96) = -.44, p = .01$, and $r_s(96) = -.44, p = .01$, for extra effort, effectiveness, and perceived, respectively. Therefore, these behaviors negatively influenced student outcomes. Based on these results, the null hypotheses (H_{03}) was rejected.

Instructor MLQ. Moderate to strong positive correlations were found between all transformational factors and satisfaction at the .01 significance level (one-tailed) shown in Table 13. Individualized consideration had significant correlations with extra effort [$r_s(28) = .44, p = .01$], perceived effectiveness [$r_s(28) = .59, p = .01$], and satisfaction [$r_s(28) = .65, p = .01$]. Idealized influence (behavior) had moderate to strong statistically significant correlations with extra effort [$r_s(28) = .44, p = .01$], perceived effectiveness [$r_s(28) = .53, p = .01$], and satisfaction [$r_s(28) = .58, p = .01$]. Positive correlations were also discovered between idealized influence (attributed) and extra effort, inspirational motivation and extra effort, and intellectual stimulation and effectiveness, each with a significance of $p = .05$. Spearman's ρ values for these correlations ranged from $r_s(28) = .35, p = .05$ to $r_s(28) = .42, p = .05$ (one-tailed). The results of this analysis using the Instructor MLQ also reject the null hypotheses (H_{01}).

Contingent reward was correlated positively with extra effort with $r_s(28) = .32, p = .05$, effectiveness with $r_s(28) = .49, p = .01$, and satisfaction with $r_s(28) = .41, p = .05$. There were no significant correlations between outcomes and management-by-exception (active), but management-by-exception (passive) had significant negative correlations with extra effort [$r_s(28) = -.31, p = .05$], perceived effectiveness [$r_s(28) = -.43, p = .01$], and satisfaction [$r_s(28) = -.44, p = .01$]. This again shows the difference in construct loading between transformational leadership and transactional leadership for contingent reward. As with the SPO MLQ, H_{02} cannot be rejected due to the difference of the factors associated with transactional leadership.

Passive-avoidant (laissez-faire) was only found to be statistically significant and negatively correlated with satisfaction [$r_s(28) = -.40, p = .05$]. Therefore, these results fail to reject the null hypotheses, H_{03} .

Table 12

Spearman's rho Correlations from SPO MLQ

	II(A)	II(B)	IM	IS	IC	CR	MBEA	MBEP	LF	EE	EFF	SAT
II(A)	1.00	.20*	.79**	.72**	.54**	.65**	.19*	-.25**	-.41**	.71**	.75**	.65**
II(B)	.20*	1.00	.12	.15	.20*	.09	.05	-.08	-.02	.22*	.15	.17*
IM	.79**	.12	1.00	.74**	.61**	.76**	.13	-.25**	-.38**	.67**	.76**	.65**
IS	.72**	.15	.74**	1.00	.52**	.67**	.32**	-.23*	-.37**	.55**	.74**	.67**
IC	.54**	.20*	.61**	.52**	1.00	.58**	.23*	-.17*	-.21*	.47**	.55**	.45**
CR	.65**	.09	.76**	.67**	.58**	1.00	.16	-.30**	-.36**	.64**	.67**	.59**
MBEA	.19*	.05	.13	.32**	.23*	.16	1.00	.04	.06	.03	.12	.14
MBEP	-.25**	-.08	-.25**	-.23*	-.17*	-.30**	.04	1.00	.55**	-.19*	-.26**	-.26**
LF	-.41**	-.02	-.38**	-.37**	-.21*	-.36**	.06	.55**	1.00	-.37**	-.44**	-.44**
EE	.71**	.22*	.67**	.55**	.47**	.64**	.03	-.19*	-.37**	1.00	.77**	.69**
EFF	.75**	.15	.76**	.74**	.55**	.67**	.12	-.26**	-.44**	.77**	1.00	.81**
SAT	.65**	.17*	.65**	.67**	.45**	.59**	.14	-.26**	-.44**	.69**	.81**	1.00

Note. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = Satisfaction.

**Correlation is significant at the .01 level (1-tailed).

*Correlation is significant at the .05 level (1-tailed).

Table 13

Spearman's rho Correlations from Instructor MLQ

	II(A)	II(B)	IM	IS	IC	CR	MBEA	MBEP	LF	EE	EFF	SAT
II(A)	1.00	.60**	.63**	.54**	.56**	.65**	.48**	-.26	-.14	.35*	.46**	.55**
II(B)	.60**	1.00	.77**	.56**	.60**	.70**	.14	-.11	-.25	.44**	.53**	.58**
IM	.63**	.77**	1.00	.58**	.66**	.55**	.13	-.32*	-.30	.42*	.59**	.56**
IS	.54**	.56**	.58**	1.00	.42*	.40*	.18	-.25	-.35*	.51**	.35*	.43**
IC	.56**	.60**	.66**	.42*	1.00	.43**	.35*	-.20	-.09	.44**	.59**	.65**
CR	.65**	.70**	.55**	.40*	.43**	1.00	.30	-.30	-.15	.32*	.49**	.41*
MBEA	.48**	.14	.13	.18	.35*	.30	1.00	.34*	.40*	-.13	.06	.12
MBEP	-.26	-.11	-.32*	-.25	-.20	-.30	.34*	1.00	.52**	-.31*	-.43**	-.44**
LF	-.14	-.25	-.30	-.35*	-.09	-.15	.40*	.52**	1.00	-.10	-.28	-.40*
EE	.35*	.44**	.42*	.51**	.44**	.32*	-.13	-.31*	-.10	1.00	.59**	.43**
EFF	.46**	.53**	.59**	.35*	.59**	.49**	.06	-.43**	-.28	.59**	1.00	.62**
SAT	.55**	.58**	.56**	.43**	.65**	.41*	.12	-.45**	-.40*	.43**	.62**	1.00

Note. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = Satisfaction.

**Correlation is significant at the .01 level (1-tailed).

*Correlation is significant at the .05 level (1-tailed).

Table 14

Spearman's rho Correlations Combined SPO and Instructor MLQ

	II(A)	II(B)	IM	IS	IC	CR	MBEA	MBEP	LF	EE	EFF	SAT
II(A)	1.00	.28**	.76**	.68**	.51**	.65**	.26**	-.27**	-.35**	.64**	.69**	.62**
II(B)	.28**	1.00	.25**	.27**	.28**	.19*	.07	-.09	-.07	.25**	.22**	.25**
IM	.76**	.25**	1.00	.70**	.58**	.71**	.13	-.27**	-.37**	.62**	.72**	.64**
IS	.68**	.23**	.70**	1.00	.46**	.63**	.29**	-.23**	-.37**	.55**	.66**	.62**
IC	.51**	.28**	.58**	.46**	1.00	.50**	.23**	-.25**	-.22**	.45**	.54**	.49**
CR	.65**	.19*	.71**	.63**	.50**	1.00	.19*	-.27**	-.31**	.57**	.62**	.54**
MBEA	.26**	.07	.13	.29**	.23**	.19*	1.00	.09	.13	.01	.12	.14
MBEP	-.25**	-.09	-.27**	-.23**	-.25**	-.27**	.09	1.00	.56**	-.21**	-.27**	-.29**
LF	-.35**	-.07	-.37**	-.37**	-.22**	-.31**	.13	.56**	1.00	-.33**	-.41**	-.44**
EE	.64**	.25**	.62**	.55**	.45**	.57**	.01	-.21**	-.33**	1.00	.74**	.64**
EFF	.69**	.22**	.72**	.66**	.54**	.62**	.12	-.27**	-.41**	.74**	1.00	.76**
SAT	.62**	.25**	.64**	.62**	.49**	.54**	.14	-.29**	-.44**	.64**	.76**	1.00

Note. II(A) = Idealized Influence (Attributed), II(B) = Idealized Influence (Behavior), IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception (Active), MBEP = Management-by-Exception (Passive), LF = Laissez-Faire, EE = Extra Effort, EFF = Effectiveness, SAT = Satisfaction.

**Correlation is significant at the .01 level (1-tailed).

*Correlation is significant at the .05 level (1-tailed).

Analysis Conclusions

In order to fully answer each research question, it was necessary to combine the results from the SPO MLQ and Instructor MLQ into one dataset. Afterwards, another correlational analysis was conducted using Spearman's *rho*, the results of which are depicted in Table 14. These results now indicate all transformational leadership characteristics are positively correlated with student outcomes with statistical significance at $p = .01$. This result rejects the null hypothesis, H_{01} , and answers research question RQ_1 , that with this data, transformational leadership characteristics are positively correlated with student outcomes. Passive-avoidant leadership was determined to be negatively correlated with student outcomes with statistical significance at $p = .01$. Therefore, the null hypotheses H_{03} was rejected, which was related to RQ_3 .

Transactional leadership, however, had mixed results, which did not provide consistent enough data to answer RQ_2 . Contingent reward still had a strong positive statistically significant correlation with student outcomes. Active management-by-exception did not have statistically significant correlations with any of the student outcomes, yet, passive management-by-exception had negative correlations with student outcomes with statistical significance of $p = .01$. Based on the mixed results for transactional leadership factors, the null hypothesis H_{02} cannot be rejected.

These results were consistent with the current body of literature available on this topic. Specifically, the research conducted by Arthur and Hardy (2014), Pounder (2008), and Slavich

and Zimbardo (2012) all determined that transformational leadership was positively and significantly correlated with outcomes, which were replicated during this study.

However, the majority of the data collected still fell within the central two quartiles of the data (percentiles) reported by Avolio and Bass (2004), which indicated congruent results with previous research. Also, an examination of descriptive statistics between sites provided an opportunity to add observational information to the results to further understand differences encountered, which were most likely due to training content. Still yet, these results, even with a smaller sample size than optimally required, add to and support the overall body of literature surrounding the topic of the full range of leadership model and leadership outcomes.

Applications to Professional Practice

Considering the large amount of resources committed to training, not only in the DOE and NNSA, but throughout business in general, it appears reasonable to plan training events with transformational leadership concepts in mind. In doing so, students will put forth extra effort during training, find the instructor more effective, and were satisfied with the instructor. These three outcomes then lead to improved performance during training and ultimately improved job performance (Dvir et al., 2002), thereby increasing the effectiveness of training resources (e.g., time, money, instructors). Furthermore, when presenting the concept of transformational leadership to instructors, training managers should also consider each instructor's personality as a start point for changing behavior, which will provide better internalization of these leadership traits (Soane et al., 2015).

As for NNSA and protective forces specifically, the knowledge of the effects of transformational leadership behavior during off-post training can be applied to future training

evolutions in order to improve SPO mission performance beyond what has been possible in the past. By reframing the approach to training, instructors were capable of improving SPO capabilities beyond rote memory regurgitation and toward problem-solvers capable of properly responding to any and all threats across the entire spectrum (Jyoti & Dev, 2015). While this is a lofty goal, it can be accomplished, especially armed with the knowledge of the strong positive correlations between transformational leadership characteristics and student outcomes. More specific applications are included in “Recommendations for Action.”

Within a Biblical framework and worldview, these concepts were displayed by Jesus time and time again throughout His mortal days. Challenging people to think for themselves and learn for themselves, Jesus displayed intellectual stimulation throughout His ministry. Teaching others how to become “fishers of men” (Matthew 4:19) is one example. Yet, one of the best examples of His leadership comes from the book of Mark in which Jesus said, “For even the Son of Man did not come to be serve, but to serve, and to give His life a ransom for many” (10:45).

The Apostle Paul was also a transformational leader, according to Scripture examples. He wanted his followers to progress beyond their current state to a new and transformed individual, capable of great things. “For though I am free from all men, I have made myself a servant to all, that I might win the more...I have become all things to all men, that I might by all means save some. Now this I do for the gospel’s sake, that I may be partaker of it with you” (1 Cor 9:19, 22-23). This was Paul’s approach to leadership. He wanted to lead more in order to serve more, thereby bringing others to Christ. He did this not for his own self-interest, but because he was following Christ and emulating Him. In this example, Christ exemplified idealized influence (attributed), which lead Paul to follow in His footsteps. “Mission is the

purpose of God and His mission is the salvation of people. Salvation is planned by God, secured by Christ, and mediated through the Holy Spirit” (Huizing, 2011, p. 65).

Recommendations for Action

First and foremost, it will be imperative to meet with training managers from all eight sites along with other subject matter experts in protective force training and operations to discuss the research project in detail. This meeting will require at least a week of time dedicated to exploring the results of this project, garnering support for this approach, and determining options for implementation. Each training manager brings a different perspective on training based upon his/her own experiences, training goals, training methodologies, and site requirements. Understanding the needs from each site and discussing possibilities for meeting those needs through the application of transformational leadership characteristics will promote the implementation of these recommendations.

Once support has been established, it will be necessary to instruct site trainers on the concepts related to the full range of leadership model, most notably, transformational leadership and student outcomes. After initial instruction, instructors must then practice, deliberately, teaching while demonstrating each transformational leadership characteristic. This can be accomplished fairly easily provided each instructor spends time, prior to SPOs arriving for training, reflecting on each characteristic and determining specifically how to behave around SPOs so that each characteristic is displayed. Over time, with deliberate practice, these behaviors should become natural, thereby increasing the authenticity of each instructor. Also, SPOs should begin to notice these slight changes from their own perspective, thereby increasing outcomes.

This approach, however, is not a one-time class on leadership. It must be an on-going process of learning, self-reflection, examination of results, and fine-tuning (Adams, 2015). To assist with this ever-evolving process, it seems reasonable to provide instructors and training managers with other research conducted on this topic in order to keep transformational leadership concepts front-of-mind. Additionally, having sites complete an MLQ on each instructor for an entire block cycle, instead of just one day, will increase the fidelity of the results and provide deeper insight into the leadership characteristics displayed by each instructor.

Once sites have incorporated transformational leadership characteristics into every off-post training evolution, it seems reasonable to then update basic training curriculum to include these concepts. By doing so, new SPOs will be indoctrinated in this model from day one. Obviously, this will take several years to fully implement this approach into all training within NNSA, yet, other studies have shown (Nichols & Erakovich, 2013; Samad, Reaburn, Davis, & Ahmed, 2015), the payoff is worth the investment.

Lastly, it will be extremely important to present this information to senior contractor management personnel, federal field office personnel (responsible for oversight of contractors), senior federal management personnel, and protective force training instructors at DOE's National Training Center (NTC). Presenting the information to these individuals will, hopefully, generate strong support for implementation and incorporation of this approach, not only into training, but then into the rest of the protective force organization.

Recommendations for Further Study

With strong management support and persistence by the training managers, transformational leadership behaviors will be incorporated, completely, into training evolutions.

Once this is accomplished, the next phase of this research could involve another round of site visits to collect data again. This would provide the opportunity to conduct a quasi-experiment. This project contains the pre-test portion of the experiment, training managers will provide the intervention with the assistance of other subject matter experts, and then data could be collected to determine changes in instructor behavior, which will then change student outcome values. In doing so, the utility of the training intervention could be examined, which could then add to the body of literature on transformational leadership (Shenge, 2014).

This current study could also be refocused on field leaders (Sergeants, Lieutenants, Captains, etc.) and their subordinate SPOs. In this case, it would be much more appropriate for leaders to have a 360° MLQ completed, which will provide much better data. A 360° MLQ requires subordinates, the leader, peers, and the leader's leaders to complete the MLQ and those scores are then combined to produce a holistic view of the individual's leadership scores on each factor and outcome. Upon completion of the analysis, the individual leader may then determine specific characteristics that should be enhanced or minimized, which then leads to extra effort of subordinates, subordinate perceived effectiveness of the leader, and satisfaction with the leader. Again, these outcomes have been found to increase performance (Chi & Pan, 2012; Mohammed et al., 2013).

Reflections

First, it is extremely important to emphatically state I truly enjoyed this experience. At the offset, I wasn't quite sure what to expect other than the entire process seemed overly detailed with many unnecessary requirements. However, now that I have worked through the project, I am remarkably satisfied. The entire research process has been very enlightening. Identification

of a real problem, searching for previous research, formulating a plan, collecting data, analyzing the data, interpreting findings, making recommendations, and finally implementing a new approach, for me, is simply magnificent. This is especially important when making a case for change to other subject matter experts because the recommendations are built upon the foundation of science and not simply another great idea, in and of itself.

Looking back, there are several things I would have done differently. Data organization I first considered overly simple. However, once the data was collected and statistical analyses performed, I found myself spending enormous amounts of time searching for information and results that were already calculated. Having a clear methodology for organizing data and analyses on the computer is a necessity that will ease future research. Also, it is necessary to completely understand and be knowledgeable of the statistical analyses to be performed prior to collecting data. I initially, and incorrectly, assumed the data would be normally distributed despite indications of non-normal distributions from other researchers, namely Pounder (2008). Therefore, in the future, it will be very helpful to clearly map the flow of data analysis beginning with tests for normality. From there, a decision tree could be constructed to guide me through the remainder of the statistical analyses.

Using a new data collection instrument, in this case the modified MLQ, proved to be more difficult than originally anticipated. Many of the issues associated with the results of the modified MLQ (e.g., reliability, discriminant validity, convergent validity) could have been minimized if I would have spent ample time working on the modified items in advance. Perhaps even pilot testing the instrument to determine validity and reliability, even in a small sample, would have proven worthwhile in the end.

Finally, when scheduling site visits, or collecting any data for that matter, it would be helpful to estimate the potential number of respondents that will be present during data collection. This could assist greatly in meeting sample size requirements in addition to normalizing data. The more representative a training day, the more accurately the sample will reflect the population. Some sites may require more observation days than others, but more time on site with more respondents will increase the fidelity of the data and also the statistical analyses.

Again, the overall research process is extremely fascinating and rewarding to me, especially considering the context of this project and the relationship of transformational leadership with Jesus. This research process has existed for a very long time and following it, wholeheartedly from the beginning is very wise. “That which has been is what will be, That which is done is what will be done, And there is nothing new under the sun” (Ecclesiastes 1:9).

Summary and Study Conclusions

The full range of leadership model is very effective at categorizing leadership behaviors and determining effects on subordinate, or student, outcomes. This model and the analysis of data collected from the MLQ is most certainly applicable to all industries, cultures, and now has been shown useful for protective force instructors within NNSA. This closes the gap with previous research that has been conducted in military units, businesses, and college classrooms. Now, the concepts and ideas presented in this project can be applied to protective force tactical training, which increases the body of knowledge on the topic of the full range of leadership model.

Transformational leadership and supporting factors, idealized influence (attributed), idealized influence (behavior), inspirational motivation, intellectual stimulation, and individualized consideration are all significantly and positively correlated with student outcomes of extra effort, perceived instructor effectiveness, and satisfaction with the instructor. These outcomes then lead to improved performance. Maximizing transformational leadership behaviors during off-post protective force training will lead to improved mission performance by NNSA's SPOs, which, in turn, help ensure the safety and security of the world's most deadly weapons and material.

References

- Adams, N. E. (2015). Bloom's taxonomy of cognitive learning objectives. *Journal of the Medical Library Association, 103*(3), 152-153. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1705546386?accountid=12085>
- Anastasi, A. (1990). *Psychological Testing*. New York: Macmillan.
- Anderson, L. W, & Krathwohl, D.R. (2001). A taxonomy for learning, teaching, and assessing: a revision of Bloom's taxonomy of educational objectives. New York, NY: Longmans.
- Antonakis, J., Avolio, B.J., & Sivasubramaniam, N. (2003). Context and leadership: an examination of the nine-factor full range of leadership theory using the multifactor leadership questionnaire. *The Leadership Quarterly, 14*(3), 261-295.
- Arnold, K. A. & Loughlin, C. (2013). Integrating transformational and participative versus directive leadership theories. *Leadership & Organization Development Journal, 34*(1), 67-84. doi:<http://dx.doi.org/10.1108/01437731311289974>
- Arthur, C. A. & Hardy, L. (2014). Transformational leadership: A quasi-experimental study. *Leadership & Organization Development Journal, 35*(1), 38-53. doi:<http://dx.doi.org/10.1108/LODJ-03-2012-0033>
- Avolio, B. J. & Bass, B. M. (2004). *Multifactor leadership questionnaire, manual and sample set (3d ed.)*. Redwood City, CA: Mindgarden.

- Bacha, E. (2014). The relationship between transformational leadership, task performance and job characteristics. *The Journal of Management Development*, 33(4), 410-420. doi:<http://dx.doi.org/10.1108/JMD-02-2013-0025>
- Barbuto, J. E., Story, J. S., Fritz, S. M., & Schinstock, J. L. (2011). Full range advising: Transforming the advisor-advisee experience. *Journal of College Student Development*, 52(6), 656-670. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/910129096?accountid=12085>
- Barlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational research: Determining appropriate sample size in survey research. *Information technology, learning, and performance journal*, 19(1), 43.
- Barling, J., Weber, T., & Kelloway, E. K. (1996). Effects of transformational leadership training on attitudinal and financial outcomes: A field experiment. *Journal of Applied Psychology*, 81(6), 827-832. doi:10.1037/0021-9010.81.6.827
- Barnes, B., Humphreys, J. H., Oyler, J. D., Pane Haden, S. S., & Novicevic, M. M. (2013). Transcending the power of hierarchy to facilitate shared leadership. *Leadership & Organization Development Journal*, 34(8), 741-762. doi:<http://dx.doi.org/10.1108/LODJ-01-2012-0015>
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: Free Press.
- Bass, B. M. (1996). *A new paradigm of leadership: An inquiry into transformational leadership*, US Army Research Institute for the Behavioral and Social Sciences, Virginia, VA.
- Bass, B.M. (1997). Does the transactional-transformational leadership paradigm transcend

organizational and national boundaries? *American Psychologist*, 52(2): 130-139.

Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, 88(2): 207-218.

Bass, B. M. and Riggio, R. E. (2006). *Transformational Leadership*. London: Lawrence Erlbaum Associates Publishers.

Beauchamp, M. R., Liu, Y., Morton, K. L., Martin, L. J., Wilson, A. H., Wilson, A. J., Barling, J. (2014). Transformational teaching and adolescent physical activity: Multilevel and mediational effects. *International Journal of Behavioral Medicine*, 21(3), 537-46.
doi:<http://dx.doi.org/10.1007/s12529-013-9321-2>

Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals*. New York, NY: Longmans, Green.

Bolkan, S. & Goodboy, A. K. (2009). Transformational leadership in the classroom: Fostering student learning, student participation, and teacher credibility. *Journal of Instructional Psychology*, 36(4), 296-306. Retrieved from
<http://search.proquest.com/docview/213903328?accountid=12085>

Bolkan, S. & Goodboy, A. K. (2011). Leadership in the college classroom: The use of charismatic leadership as a deterrent to student resistance strategies. *Journal of Classroom Interaction*, 46(2), 4-10. Retrieved from
<http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1011399499?accountid=12085>

- Bolkan, S. (2015). Intellectually stimulating students' intrinsic motivation: The mediating influence of affective learning and student engagement. *Communication Reports*, 28(2), 80. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1681111965?accountid=12085>
- Brown, W. & May, D. (2012). Organizational change and development. *The Journal of Management Development*, 31(6), 520-536.
doi:<http://dx.doi.org/10.1108/02621711211230830>
- Burns, J. M. (1978). *Leadership*. New York: Harper & Row.
- Chi, N., & Pan, S. (2012). A multilevel investigation of missing links between transformational leadership and task performance: The mediating roles of perceived person-job fit and person-organization fit. *Journal of Business and Psychology*, 27(1), 43-56.
doi:<http://dx.doi.org/10.1007/s10869-011-9211-z>
- Chudleigh, J. & Smith, J. (2015). Research essentials. *Nursing Children and Young People* (2014), 27(3), 12. doi:<http://dx.doi.org/10.7748/ncyp.27.3.12.s13>
- Clinebell, S., Skudiene, V., Trijonyte, R., & Reardon, J. (2013). Impact of leadership styles on employee organizational commitment. *Journal of Service Science (Online)*, 6(1), 139.
Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1468618385?accountid=12085>
- Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York: John Wiley & Sons.

- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage Publishing, Inc.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika* 16(3), 297-334. doi:10.1007/BF02310555
- DOE's Nuclear Weapons Complex: Challenges to safety, security, and taxpayer stewardship: Hearing before the Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, U. S. House of Representatives, 112 Cong. 17 (2012). Retrieved from <http://www.gpo.gov/fdsys/pkg/CHRG-112hrg85180/pdf/CHRG-112hrg85180.pdf>
- Dvir, T., Eden, D., Avolio, B. J., & Shamir, B. (2002). Impact of transformational leadership on follower development and performance: A field experiment. *Academy of Management Journal*, 45(4), 735-744. doi:10.2307/3069307
- Edwards, G., Schyns, B., Gill, R., & Higgs, M. (2012). The MLQ factor structure in a UK context. *Leadership & Organization Development Journal*, 33(4), 369-382. doi:<http://dx.doi.org/10.1108/01437731211229304>
- Eliophotou, M. (2014). The relationship between transformational leadership, perceived leader effectiveness and teachers' job satisfaction. *Journal of Educational Administration*, 52(4), 509. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1660746213?accountid=12085>
- Fitzgerald, S. & Schutte, N. S. (2010). Increasing transformational leadership through enhancing self-efficacy. *The Journal of Management Development*, 29(5), 495-505. doi:<http://dx.doi.org/10.1108/02621711011039240>

- Fredendall, L. D., Robbins, T., & Moore, D. (2001). The influence of instructor leadership on student commitment and performance. *Educational Research Quarterly*, 24(4), 55. Retrieved from <http://search.proquest.com/docview/216187800?accountid=12085>
- Garger, J. & Jacques, P. H. (2008). A levels approach to student perceptions of leadership. *The International Journal of Educational Management*, 22(3), 251-258.
doi:<http://dx.doi.org/10.1108/09513540810861883>
- Gavin T. L., Brown, & Chai, C. (2012). Assessing instructional leadership: A longitudinal study of new principals. *Journal of Educational Administration*, 50(6), 753-772.
doi:<http://dx.doi.org/10.1108/09578231211264676>
- Gibbs, S. (2015). *Behind the blue line: Protecting our nuclear weapons complex*. Knoxville, TN: Gibbs Publishing.
- Guay, R. P. (2013). The relationship between leader fit and transformational leadership. *Journal of Managerial Psychology*, 28(1), 55-73.
doi:<http://dx.doi.org/10.1108/02683941311298869>
- Harrison, J. L. (2011). Instructor transformational leadership and student outcomes. *Emerging leadership journeys*, 4(1), 91-119. Retrieved from https://www.researchgate.net/profile/Janelle_Harrison/publication/268421953_Instructor_Transformational_Leadership_and_Student_Outcomes/links/55d4e17f08ae6788fa35277d.pdf

Hamstra, M. R. W., Van Yperen, N.W., Wisse, B., & Sassenberg, K. (2014).

Transformational and transactional leadership and followers' achievement goals. *Journal of Business and Psychology*, 29(3), 413-425. doi:<http://dx.doi.org/10.1007/s10869-013-9322-9>

Heck, R. H. (2009). Teacher effectiveness and student achievement. *Journal of Educational Administration*, 47(2), 227-249. doi:<http://dx.doi.org/10.1108/09578230910941066>

Hedlund, E. & Österberg, J. (2013). Team training, team learning, leadership and psychology safety: A study of team training and team learning behavior during a Swedish military staff exercise. *Sociology Mind*, 3(1), 89-98. Retrieved from <http://search.proquest.com/docview/1318921607?accountid=12085>

Hemsworth, D., Muterera, J., & Baregheh, A. (2013). Examining Bass's transformational leadership in public sector executives: A psychometric properties review. *Journal of Applied Business Research*, 29(3), 853-862. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1370363950?accountid=12085>

Hetland, H., Hetland, J., Cecilie, S. A., Pallesen, S., & Notelaers, G. (2011). Leadership and fulfillment of the three basic psychological needs at work. *Career Development International*, 16(5), 507-523. doi:<http://dx.doi.org/10.1108/13620431111168903>

Hetland, H., Skogstad, A., Hetland, J., & Mikkelsen, A. (2011). Leadership and learning climate in a work setting. *European Psychologist*, 16(3), 163-173. doi:10.1027/1016-9040/a000037

- Huizing, R. L. (2011). Bringing Christ to the table of leadership: Moving towards a theology of leadership. *The Journal of Applied Christian Leadership*, 5(2), 58-75. Retrieved from <http://ezproxy.liberty.edu/login?url=http://search.proquest.com.ezproxy.liberty.edu/docview/1518930248?accountid=12085>
- Hutchins, H. M. (2009). In the trainer's voice: A study of training transfer practices. *Performance Improvement Quarterly*, 22(1), 69-93. Retrieved from <http://search.proquest.com/docview/218576043?accountid=12085>
- Indrayanto, A., Burgess, J., Dayaram, K., & Noermijati. (2014). A case study of transformational leadership and para-police performance in Indonesia. *Policing*, 37(2), 373-388. Retrieved from <http://search.proquest.com/docview/1536162218?accountid=12085>
- Institute for Economics and Peace. (2016). *Global terrorism index 2016: Measuring and understanding the impact of terrorism*. Retrieved from <http://economicsandpeace.org/wp-content/uploads/2016/11/Global-Terrorism-Index-2016.2.pdf>
- Jyoti, J., & Dev, M. (2015). The impact of transformational leadership on employee creativity: The role of learning orientation. *Journal of Asia Business Studies*, 9(1), 78-98. Retrieved from <http://ezproxy.liberty.edu/login?url=http://search.proquest.com.ezproxy.liberty.edu/docview/1690464000?accountid=12085>
- Kendrick, J. (2011). Transformational leadership. *Professional Safety*, 56(11), 14. Retrieved from

<http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/902758508?accountid=12085>

Keung, E. K. & Rockinson-Szapkiw, A. (2013). The relationship between transformational leadership and cultural intelligence. *Journal of Educational Administration, 51*(6), 836-854. doi:<http://dx.doi.org/10.1108/JEA-04-2012-0049>

Kovjanic, S., Schuh, S. C., & Jonas, K. (2013). Transformational leadership and performance: An experimental investigation of the mediating effects of basic needs satisfaction and work engagement. *Journal of Occupational and Organizational Psychology, 86*(4), 543.

Retrieved from

<http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1441710580?accountid=12085>

Landis, E. A., Hill, D., & Harvey, M. R. (2014). A synthesis of leadership theories and styles.

Journal of Management Policy and Practice, 15(2), 97-100. Retrieved from

<http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1535935047?accountid=12085>

Laohavichien, T., Fredendall, L. D., & Cantrell, R. S. (2009). The effects of transformational and transactional leadership on quality improvement. *The Quality Management Journal, 16*(2), 7-24. Retrieved from

[http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/213592052](http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/213592052?accountid=12085)

<http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/213592052?accountid=12085>

- Loon, M., Lim, Y. M., Teck, H. L., & Cai, L. T. (2012). Transformational leadership and job-related learning. *Management Research Review*, 35(3), 192-205.
doi:<http://dx.doi.org/10.1108/01409171211210118>
- McEnery, K. (2015). *Department of Energy adaptive leader training pilot program workshop August 2015: Participant workbook*. Unpublished manuscript.
- Mesu, J., Maarten, V. R., & Sanders, K. (2013). Labour flexibility in SMEs: The impact of leadership. *Employee Relations*, 35(2), 120-138.
doi:<http://dx.doi.org/10.1108/01425451311287835>
- Mohammed, Y. G., Fernando, M., & Caputi, P. (2013). Transformational leadership and work engagement. *Leadership & Organization Development Journal*, 34(6), 532-550.
doi:<http://dx.doi.org/10.1108/LODJ-10-2011-0110>
- National Nuclear Security Administration, Office of Defense Nuclear Security. (2014). *Enterprise mission essential task list-based protective force training program: NNSA SD 473.3*.
- Nichols, T. W. & Erakovich, R. (2013). Authentic leadership and implicit theory: A normative form of leadership? *Leadership & Organization Development Journal*, 34(2), 182-195.
doi:<http://dx.doi.org/10.1108/01437731311321931>
- Northouse, P. G. (2013). *Leadership: Theory and practice* (6th ed.). Thousand Oaks, CA: Sage Publications. ISBN: 9781452203409.
- Onorato, M. (2013). Transformational leadership style in the educational sector: An empirical study of corporate managers and educational leaders. *Academy of Educational Leadership Journal*, 17(1), 33-47. Retrieved from

<http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1368593704?accountid=12085>

- Overbey, J. A. (2013). Telecommuter intent to leave. *Leadership & Organization Development Journal, 34*(7), 680-699. doi:<http://dx.doi.org/10.1108/LODJ-01-2012-0004>
- Peus, C., Wesche, J. S., Streicher, B., Braun, S., & Frey, D. (2012). Authentic leadership: An empirical test of its antecedents, consequences, and mediating mechanisms. *Journal of Business Ethics, 107*(3), 331-348. doi:<http://dx.doi.org/10.1007/s10551-011-1042-3>
- Phipps, S. T. A., Prieto, L. C., & Ndinguri, E. N. (2013). Teaching an old dog new tricks: Investigating how age, ability, and self-efficacy influence intentions to learn and learning among participants in adult education. *Academy of Educational Leadership Journal, 17*(1), 13-25. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1368593692?accountid=12085>
- Pimpa, N. & Moore, T. (2012). Leadership styles: A study of Australian and Thai public sectors. *Asian Academy of Management Journal, 17*(2), 21-37. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1506451250?accountid=12085>
- Poon, J. T. F. (2003). A method for trainers to examine teaching feedback. *Management Research News, 26*(1), 64-68. Retrieved from <http://search.proquest.com/docview/223546456?accountid=12085>

- Pounder, J. S. (2003). Employing transformational leadership to enhance the quality of management development instruction. *The Journal of Management Development*, 22(1), 6-13. Retrieved from <http://search.proquest.com/docview/216300024?accountid=12085>
- Pounder, J. S. (2008). Full range classroom leadership: Implications for the cross organizational and cross cultural applicability of the transformational-transactional paradigm. *Leadership*, 4(2), 115-135. Retrieved from <http://lea.sagepub.com.ezproxy.liberty.edu:2048/content/4/2/115.full.pdf+html>
- Pounder, J. S. (2009). Transformational classroom leadership: A basis for academic staff development. *The Journal of Management Development*, 28(4), 317-325. doi:<http://dx.doi.org/10.1108/02621710910947353>
- Pounder, J. (2014). Quality teaching through transformational classroom leadership. *Quality Assurance in Education*, 22(3), 273. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1662626382?accountid=12085>
- Quinn, K. (2011). Adaptive behavior. *Training & Simulation Journal*, 29. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/904508876?accountid=12085>
- Quintana, T. A., Park, S., & Cabrera, Y. A. (2015). Assessing the effects of leadership styles on employees' outcomes in international luxury hotels. *Journal of Business Ethics*, 129(2), 469-489. doi:<http://dx.doi.org/10.1007/s10551-014-2170-3>

- Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin*, 138(2), 353-387. doi:10.1037/a0026838
- Rowley, J. (2014). Designing and using research questionnaires. *Management Research Review*, 37(3), 308-330. doi:http://dx.doi.org/10.1108/MRR-02-2013-0027
- Ruddell, L. S. (2008). Transformational leadership as an effective classroom leadership model for business ethics instruction. *Academy of Educational Leadership Journal*, 12(2), 49-68. Retrieved from <http://search.proquest.com/docview/214228207?accountid=12085>
- Sabie, O., & Androniceanu, A. (2012). Persuasive communication at the academic level and how to make it more effective. *Administratie Si Management Public*, (18), 26-52. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1313183592?accountid=12085>
- Sahin, D. R., Çubuk, D., & Uslu, T. (2014). The effect of organizational support, transformational leadership, personnel empowerment, work engagement, performance and demographical variables on the factors of psychological capital. *Emerging Markets Journal*, 3(3), 1-17. doi:http://dx.doi.org/10.5195/emaj.2014.49
- Samad, A., Reaburn, P., Davis, H., & Ahmed, E. (2015). Towards an understanding of the effect of leadership on employee wellbeing and organizational outcomes in Australian universities. *The Journal of Developing Areas*, 49(6), 441-448. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1706232957?accountid=12085>

- Schaab, B. B. & Dressel, J. D. (2001). Training digital system skills: Increasing transfer and reducing workload. *Proceedings of the Human Factors and Ergonomics Society ...Annual Meeting, 2*, 1820. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/235477353?accountid=12085>
- Schiena, R. D., Letens, G., VanAken, E., & Farris, J. (2013). Relationship between leadership and characteristics of learning organizations in deployed military units: An exploratory study. *Administrative Sciences, 3*(3), 143-165.
doi:<http://dx.doi.org/10.3390/admsci3030143>
- Schmider, E., Ziegler, M., Danay, E., Beyer, L., & Bühner, M. (2010). Is it really robust? *Methodology, 6*(4), 147-151. doi: 10.1027/1614-2241/a000016
- Schweitzer, J. (2014). Leadership and innovation capability development in strategic alliances. *Leadership & Organization Development Journal, 35*(5), 442. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1651358647?accountid=12085>
- Sedgwick, P. (2014). Spearman's rank correlation coefficient. *BMJ: British Medical Journal (Online), 349* doi:<http://dx.doi.org.ezproxy.liberty.edu/10.1136/bmj.g7327>
- Shenge, N. A. (2014). Training evaluation: Process, benefits, and issues. *Ife Psychologia, 22*(1), 50-58. Retrieved from <http://search.proquest.com/docview/1657555561?accountid=12085>

- Slavich, G. M., & Zimbardo, P. G. (2012). Transformational teaching: Theoretical underpinnings, basic principles, and core methods. *Educational Psychology Review*, 24(4), 569-608. doi:<http://dx.doi.org/10.1007/s10648-012-9199-6>
- Soane, E., Butler, C., & Stanton, E. (2015). Followers' personality, transformational leadership and performance. *Sport, Business and Management*, 5(1), 65. Retrieved from <http://ezproxy.liberty.edu/login?url=http://search.proquest.com.ezproxy.liberty.edu/docview/1653114522?accountid=12085>
- Swid, A. (2014). Police members' perception of their leaders' leadership style and its implications. *Policing*, 37(3), 579. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1660957709?accountid=12085>
- Sze, S. & Kester-Phillips, D. (2008). Getting down to business - classroom management. Institute for Learning Centered Education, Niagara University Retrieved from https://scholar.google.com/scholar?hl=en&q=%22Getting+down+to+business++classroom+management%27&btnG=&as_sdt=1%2C43&as_sctp=
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53-55. Retrieved from <http://ezproxy.liberty.edu/login?url=http://search.proquest.com.ezproxy.liberty.edu/docview/898889039?accountid=12085>
- Tsai, K. C. & Lin, K. (2012). Rethink student evaluation of teaching. *World Journal of Education*, 2(2), 17-n/a. Retrieved from <http://search.proquest.com/docview/1030090580?accountid=12085>

- United States (2012). *Training units and developing leaders: Army doctrine publication 7-0*, Washington, DC: Headquarters, Department of the Army.
- U.S. Department of Energy, Office of Health, Safety and Security. (2016). *Protection program operations: DOE O 473.3A*. Retrieved from <https://www.directives.doe.gov/directives-documents/400-series/0473.3-BOrder>
- U.S. Department of Energy, Office of Inspector General, Office of Inspections and Special Inquiries. (2005). *Protective force training at the Department of Energy's Oak Ridge Reservation (DOE/IG-0694)*. Retrieved from <http://energy.gov/sites/prod/files/igprod/documents/CalendarYear2005/ig-0694.pdf>
- U.S. Department of Energy, Office of Inspector General, Office of Audit Services. (2010). *Special report: Management challenges at the Department of Energy (DOE/IG-0844)*. Retrieved from <http://energy.gov/sites/prod/files/igprod/documents/IG-0844.pdf>
- U.S. Department of Energy, Office of Inspector General, Office of Audits and Inspections. (2012). *Inquiry into the security breach at the National Nuclear Security Administration's Y-12 National Security Complex (DOE/IG-0868)*. Retrieved from http://energy.gov/sites/prod/files/IG-0868_0.pdf
- U.S. Government Accountability Office. (2010). *Nuclear security: DOE needs to address protective forces' personnel system issues (GAO-10-275)*. Retrieved from <http://www.gao.gov/assets/310/300477.pdf>
- Vandergriff, D. E. (2006). From swift to swiss. *Performance Improvement*, 45(2), 30-39,48. Retrieved from

<http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/237247787?accountid=12085>

- Van Yperen, N. W. & Orehek, E. (2013). Achievement goals in the workplace: Conceptualization, prevalence, profiles, and outcomes. *Journal of Economic Psychology*, (38), 71-79. Retrieved from http://ac.els-cdn.com/S0167487012001006/1-s2.0-S0167487012001006-main.pdf?_tid=f42f836a-4e71-11e6-94cc-00000aab0f26&acdnat=1469016382_33248b94f8b968b67e6ec2dd49dfa5a2
- Walumbwa, F. O., Wu, C., & Ojode, L. A. (2004). Gender and instructional outcomes: The mediating role of leadership style. *The Journal of Management Development*, 23(2), 124-140. Retrieved from <http://search.proquest.com/docview/216348172?accountid=12085>
- Walumbwa, F. O., Avolio, B. J., & Zhu, W. (2008). How transformational leadership weaves its influence on individual job performance: The role of identification and efficacy beliefs. *Personnel Psychology*, 61(4), 793-825. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/220138744?accountid=12085>
- Wang, J. (2010). Strategies for filling a performance gap between practice and high-level competition. *Journal of Physical Education, Recreation & Dance*, 81(6), 26-32. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/746778740?accountid=12085>
- Wang, G., Oh, I. S., Courtright, S. H., & Colbert, A. E. (2011). Transformational leadership and performance across criteria and levels: A meta-analytic review of 25 years of research.

- Group & Organization Management*, 36(2), pp. 223-270. Retrieved from <http://gom.sagepub.com.ezproxy.liberty.edu:2048/content/36/2/223.full.pdf+html>
- Warrens, M. J. (2015). Some relationships between Cronbach's alpha and the Spearman-Brown formula. *Journal of Classification*, 32(1), 127-137. doi:<http://dx.doi.org/10.1007/s00357-015-9168-0>
- Washington, R. R., Sutton, C. D., & Sauser, W. I. Jr. (2014). How distinct is servant leadership theory? Empirical comparisons with competing theories. *Journal of Leadership, Accountability and Ethics*, 11(1), 11-25. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1535387565?accountid=12085>
- West, C. (2012). Teaching leadership to undergraduates: Lessons from U.S. military colleges. *Journal of College Teaching & Learning (Online)*, 9(2), 135. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1418716035?accountid=12085>
- Yang, Z. R., & Zeng, Z. (2014). Outlier analysis in large sample and high dimensional data based on feature weighting. *Applied Mechanics and Materials*, 571-572, 650-657. doi:<http://dx.doi.org.ezproxy.liberty.edu/10.4028/www.scientific.net/AMM.571-572.650>
- Zacher, H., Pearce, L. K., Rooney, D., & McKenna, B. (2014). Leaders' personal wisdom and leader-member exchange quality: The role of individualized consideration. *Journal of Business Ethics*, 121(2), 171-187. doi:<http://dx.doi.org/10.1007/s10551-013-1692-4>
- Zwingmann, I., Wegge, J., Wolf, S., Rudolf, M., Schmidt, M., & Richter, P. (2014). Is transformational leadership healthy for employees? A multilevel analysis in 16 nations.

Zeitschrift Für Personalforschung, 28(1), 24-51. Retrieved from

<http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1525836613?accountid=12085>

Appendix A: Instruction Script

The following is the script that will be read to each participant:

“I am conducting research concerning leadership characteristics of protective force instructors and I would like your help. I hope to determine which instructor leadership characteristics are positively related to effective training and ultimately positive mission performance.

In front of you is a survey I will ask each of you to complete. Participation in this research is completely voluntary and you may choose not to complete the survey. This, in no way, will reflect negatively on you at all. Please DO NOT include your name or the name of the lead instructor on the survey, as this is completely anonymous.

Please complete the survey on the lead instructor for today’s activities. Answer all items on this answer sheet. If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank. This should take about 15-minutes to complete. If you have questions or comments concerning this research you may contact me at any time, my contact information is listed on the board.”

Appendix B: Institutional Review Board Consent Form

The Liberty University Institutional
Review Board has approved
this document for use from
10/17/2016 to –
Protocol # 2649.101716

CONSENT FORM

LEADERSHIP CHARACTERISTICS OF PROTECTIVE FORCE INSTRUCTORS

Justen D. Parker
Liberty University
School of Business

You are invited to be in a research study of instructor leadership characteristics. You were selected as a possible participant because you are participating in off-post training today. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

Justen Parker, a doctoral candidate in the School of Business at Liberty University, is conducting this study.

Background Information: The purpose of this study is to identify the beneficial leadership characteristics of instructors that enhance training and increase student outcomes and improve mission performance.

Procedures: If you agree to be in this study, I would ask you to do the following things:

1. Complete the Multifactor Leadership Questionnaire based on the instructors and training conducted today. This will take about 15-minutes.
2. Then, complete the modified items, of which there are 19. This will take about 5-minutes to complete.
3. Staple the two questionnaires together and place them in the envelope provided. This will ensure all the data collected is completed anonymous.

Risks and Benefits of being in the Study: The risks involved in this study are minimal, no more than you would encounter in everyday life.

There are no benefits to participating in this study. However, the results of this research may improve the quality of training over time and make training more enjoyable and more rewarding.

Compensation: Participants will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

- Only Justen Parker and participants will be present in the room during the survey. This will eliminate anyone other than the participants and Justen from knowing who did or did not participate. Additionally, exact dates and times of survey completion will not be included in the data. Upon completion, each participant will place their questionnaire into an envelope to prevent Justen from knowing which questionnaire was completed by each participant.
- Survey results (completed surveys) will be stored in Justen's home office with no identifying information. Data gathered from the surveys will be stored on Justen's local computer, which is password protected and no other person has access. At the end of the

Appendix C: Permission for Use of MLQ

For use by Justen Parker only. Received from Mind Garden, Inc. on January 19, 2016



www.mindgarden.com

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material for his/her research:

Instrument: *Multifactor Leadership Questionnaire*

Authors: *Bruce Avolio and Bernard Bass*

Copyright: *1995 by Bruce Avolio and Bernard Bass*

Five sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any published material.

Sincerely,

Robert Most
Mind Garden, Inc.
www.mindgarden.com

Appendix D: Modified MLQ Items

The following are samples of the modified item (beginning with “the instructor”), a similar sample item from Pounder (2008), and the original MLQ item:

- (Idealized Influence – Behavior) Specifies the importance of training as it relates to the protective force mission.
- (Pounder, 2008) He/She explains that a commitment to learning is important for a student to succeed in this course.
- (Original MLQ item) Specifies the importance of having a strong sense of purpose.
- (Inspirational Motivation) Talks enthusiastically about training outcomes and what is to be accomplished.
- (Pounder, 2008) He/She enthusiastically talks about what to do to make the course a success.
- (Original MLQ item) Talks enthusiastically about what needs to be accomplished.
- (Intellectual Stimulation) Re-examines critical assumptions (tactics, techniques, and procedures) to question whether they are appropriate.
- (Pounder, 2008) He/She critically thinks and comments on the fundamental assumptions of a school of thought or theory.
- (Original MLQ item) Re-examines critical assumptions to question whether they are appropriate.
- (Management-by-Exception – Passive) Demonstrates a reluctance to modify the block of instruction unless there are constant problems with the training.

- (Pounder, 2008) He/She demonstrates a reluctance to take action to put things right unless there are constant problems with the course.
- (Original MLQ item) Demonstrates that problems must become chronic before taking action.

Permission from James Pounder to use his items in this research:

From: **Stuart POUNDER James** pounder@ln.edu.hk
Subject: Re: MLQ for teachers
Date: January 8, 2017 at 9:03 PM
To: **Parker Justen** justen@cogent-security.com



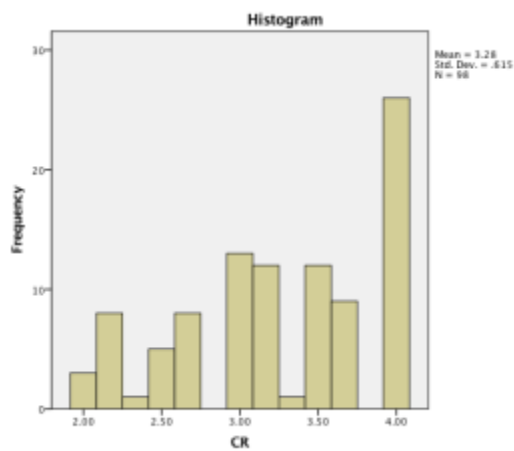
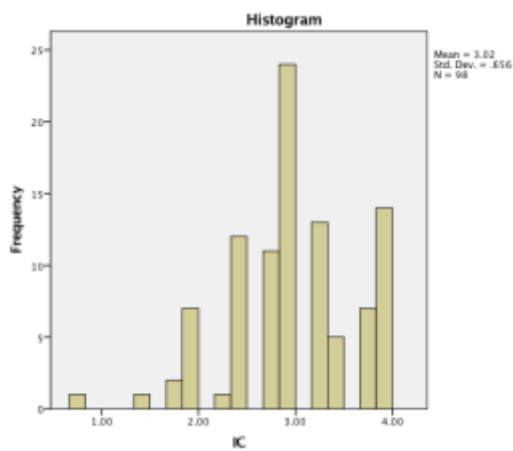
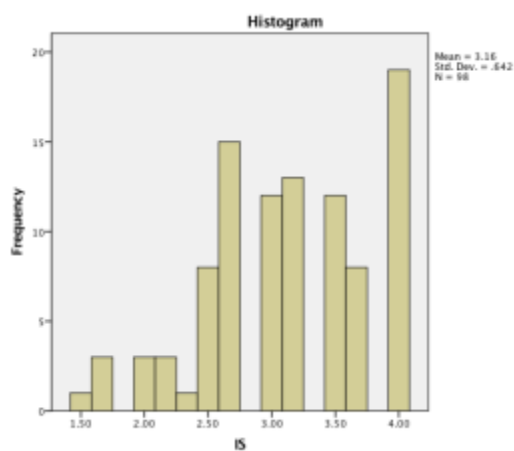
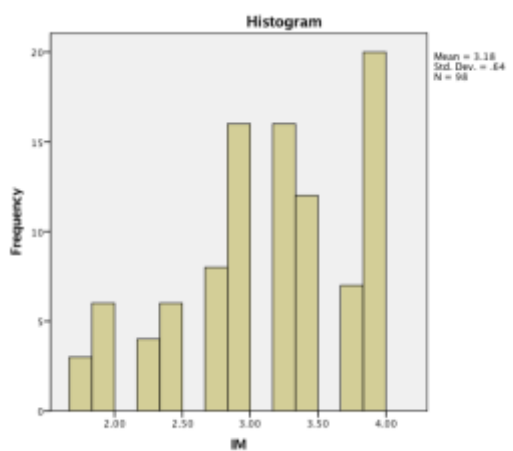
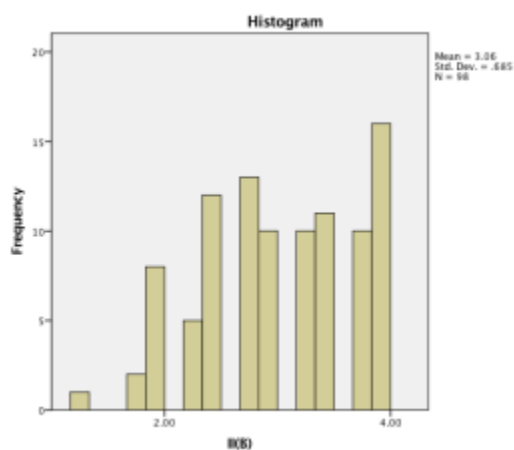
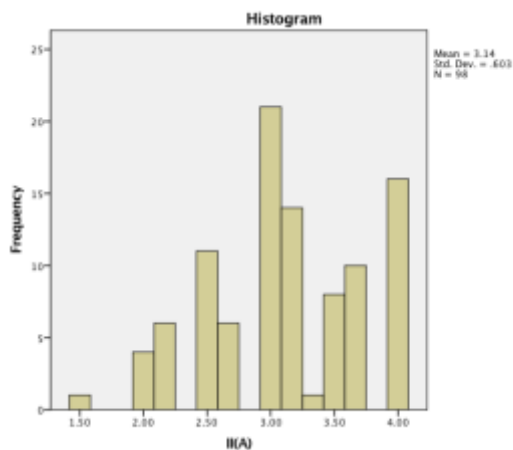
Dear Justen,

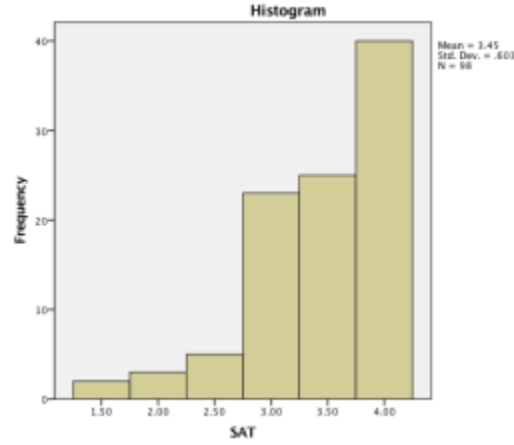
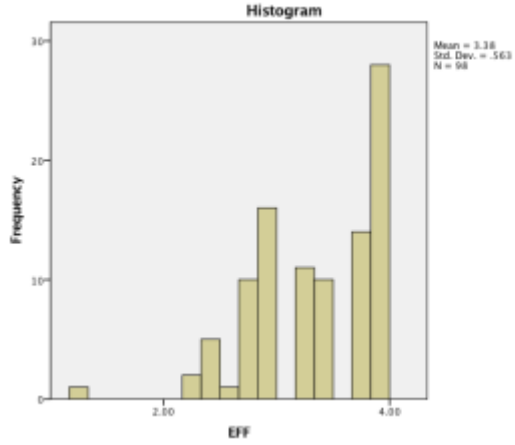
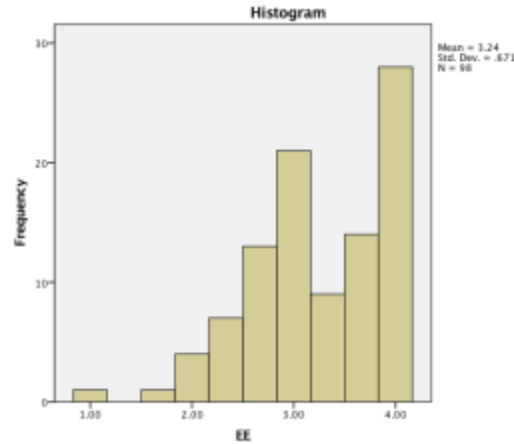
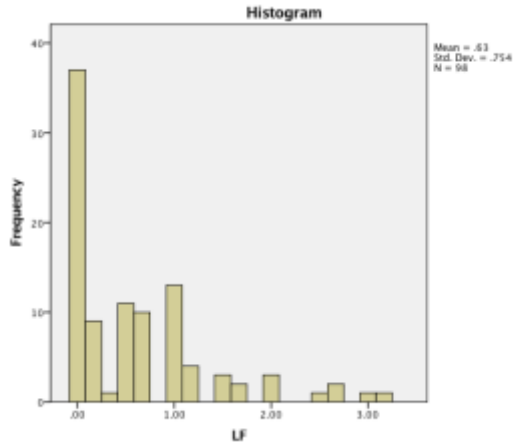
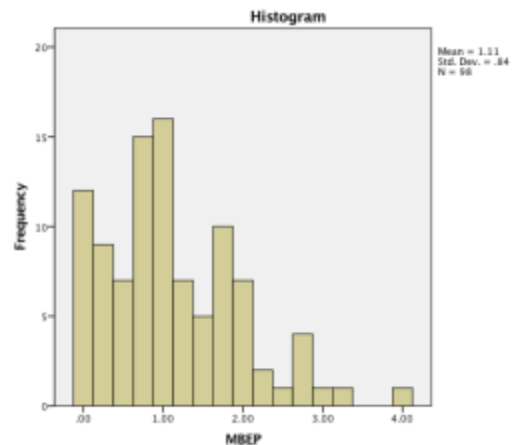
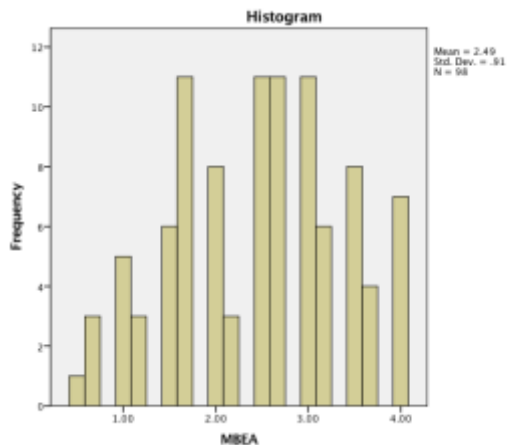
Good to hear that the work has been helpful. Do I assume you are a Christian gives your attachment to Liberty? I have often thought that the transformational leadership is a moral form of leadership that is consistent with the Faith. For your dissertation, feel free to use any examples that support the argument.

Keep in touch because we might be able to develop this concept further.

Best,
Jim

Appendix E: SPO MLQ Histograms





Appendix F: Sample MLQ Items

The following are sample questions from the MLQ (Form 5X), provided by Avolio and Bass (2004) and Bass and Riggio (2006) for five of the characteristics, which were defined previously:

(Idealized Influence – Behavior) My leader specifies the importance of having a strong sense of purpose.

(Inspirational Motivation) My leader articulates a compelling vision of the future.

(Intellectual Stimulation) My leader seeks differing perspectives when solving problems.

(Management-by-Exception – Passive) My leader shows that he or she is a firm believer in “If it ain’t broke, don’t fix it.”

(Laissez-Faire) My leader delays responding to urgent request (p. 21).

Appendix G: Institutional Review Board Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

October 17, 2016

Justen D. Parker
IRB Exemption 2649.101716: Leadership Characteristics of Protective Force Instructors

Dear Justen D. Parker,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(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.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
The Graduate School

LIBERTY
UNIVERSITY.
Liberty University | Training Champions for Christ since 1971