Leadership Characteristics and Educational Levels Prevalent Among Senior-Level Fire Service Personnel in the United States

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Leadership Characteristics and Educational Levels Prevalent Among Senior-Level Fire
Service Personnel in the United States

Submitted by

Bernard W. Becker, III

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctorate of Business Administration

Columbia Southern University
Orange Beach, Alabama
April 12, 2016
COLUMBIA SOUTHERN UNIVERSITY

Leadership Characteristics and Educational Levels Prevalent Among Senior-Level Fire Service Personnel in the United States

by

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Date April 28, 2016
Abstract

This study examines if a significant correlation exists between leadership characteristics and levels of education of senior-level personnel and the U. S. fire service organizational culture. The purpose of this quantitative descriptive study was to identify leadership characteristics and educational levels among senior-level fire service personnel in the United States. The study included two research questions. What is the prevalent leadership characteristic? What level of education is prevalent among senior-level fire service personnel in the United States? The two independent variables included leadership characteristics and educational levels. The dependent variable is the organizational culture. The Multifactor Leadership Questionnaire captured the research. The theoretical framework was transformational leadership. Out of the one thousand NFA/EFO students identified, 465 students completed the survey with 95% confidence level and a 3.33% margin of error. Data collection occurred over 30 days using SurveyMonkey. The study included the statistical $t$ test and descriptive analysis test. A relationship existed in leadership characteristics and no level of education was prevalent among senior-level fire service personnel. Two practical implications emerged. First, the need for senior-level fire service personnel to earn formal education. Second, advance education may enhance a businesslike culture and professionalism in the fire service. Future research implications encompass fire science combined with leadership characteristic education as a degree course of instruction nationwide.

**Keywords:** fire and emergency service, leadership characteristics, National Fire Academy Executive Fire Officer Program, senior-level fire service personnel, transactional leadership.
Dedication

I dedicate this research study to my wife, Jan, who has supported me wholeheartedly in this and other career ventures. I further dedicate this dissertation to my family, friends, and fire and emergency service colleagues around the world who diligently provide safety and protection through leadership and perseverance. Finally, I dedicate this dissertation to my mentors, Dr. John Granito, Dr. Denis Onieal, Dr. Burton Clark, and Dr. Mary Ellen Dorsett, who have inspired me to further my horizons in education and academia.
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Chapter 1: Introduction to the Study

Introduction

Understanding leadership characteristics and education levels prevalent in the United States Fire Service, comparable to businesslike organizations, have not been identified (Clark, 2015). This study examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the U. S. fire service organizational culture. Quantitative descriptive design examined the leadership characteristics and educational levels of 1,000 senior-level students of the U.S. Department of Homeland Security, U.S. Fire Administration (USFA), and National Fire Academy Executive Fire Officer Program (NFA/EFO). This researcher engaged the Multifactor Leadership Questionnaire (MLQ 5X short form) in identifying leadership characteristics and educational levels in the United States fire service (Avolio & Bass, 2014).

The two independent variables include leadership characteristics and educational levels. The dependent variable is the organizational culture. The MLQ 5X short form captured the research. The U.S. fire service profession is a publicly respected, lifelong occupation that allows a person to feel proud (Daugherty, 2012). Individuals wanting to master the fire service profession must receive training and education (Daugherty, 2012).

Leadership has a recognizable and commanding role in the fire and emergency service culture and influences all aspects of life (Van Wart, 2014). Senior-level fire service personnel are responsible for coordinating the efforts of emergency response organizations during a declared catastrophe (Scarpa, 2012). Fire service leaders are responsible for all incident activities, including the development of strategies and tactics,
ordering and release of resources (Napolitano, 2007). This study is worth conducting because identifying the prevalent leadership characteristic for senior-level fire service personnel has been infrequent (Clark, 2015). The United States fire service leadership and education levels are not comparable to businesslike organizations, as it should be (Clark, 2015).

Three factors influence the significant leadership and educational gaps identified for senior-level fire personnel (Ditch, 2012). First, raise the bar of professionalism within public safety across the United States (Ditch, 2012). Second, fire service individuals should seek higher education in fire and emergency services as well as understanding leadership characteristics for organizational success (Clark, 2015). Finally, students should seek higher education for future promotional opportunities (Clark, 2015). Unfortunately, the current fire science curriculum may not match the official position description (Ditch, 2012). Organized leadership research is necessary to support those findings (Ditch, 2012). To reach a suitable sample size based on a G*Power analysis, the study population was sent via email to 1,000 NFA/EFO senior-level students employed throughout the United States. At least 278 surveys were necessary to earn a 95% confidence level with a margin of error of 5%. This study obtained 465 completed surveys, demonstrating a 3.3% margin of error. Chapter 1 includes a review of the study, a background of the problem, the problem statement, and the purpose of the study. The chapter also includes the research questions and theories, the advancement of scientific knowledge, the significance of the study, the reason of the method, the nature of the research design, and definition of terms. The chapter ends with assumptions, limits, delimitations, and a summary.
Background of the Study

Leadership characteristics and educational levels are essential to senior-level fire service personnel in the United States (Clark, 2015; Ditch, 2012). Earning an academic degree has become a need in the corporate and business world (Ditch, 2012). The history of the U.S. fire service has advanced from a classic top-down, rigid approach to one that includes complex interrelationships and shared responsibilities (Ditch, 2012).

Additional research in leadership characteristics and educational levels must be a fire service priority (Fox, 2009). Helping leaders understand their leadership characteristics using the MLQ 5X short form could be rewarding to leadership growth and development (Avolio & Bass, 2014). In order to understand this concept, research studies must consider identifying if transformational leadership is prevalent for emergency managers in other levels of government, other types of organizations and in other geographic regions (Wilderman, 2013). Leadership characteristics are important elements in the United States fire service and a necessary part in advancing the profession to become more dynamic and efficient (Fox, 2009; Van Wart, 2014).

To better comprehend the United States fire service culture, United States fire service leaders should recognize which factors influence professional development related to higher education (Smeby, 2013). Leaders in high-reliability organizational contexts such as emergency medicine, and law enforcement often face dangerous challenges that are highly ambiguous, with rapidly changing environments (Smeby, 2013). More stable conditions have been the focus of other researchers (Baran & Scott, 2010). Leadership characteristics and educational levels are two factors that shape the degree to which individuals accurately perceive and assess risk (Bruegman, 2011).
Since the September 11, 2001 terrorist attacks at the World Trade Center, which resulted in the loss of 2,819 lives, interest in disaster-related training and education has increased (Menard, 2011). Reorganization of federal and local governments resulted in improvements in preparing and responding to disasters and acts of terrorism (Emrick, 2010). Over the past 30 years, the demand for higher education in the United States fire service has transitioned from a blue-collar service to a proficient-level profession (Bruegman, 2011). Contextual education replaced the skill-level-only training philosophy (Bruegman, 2011). Earning a higher education in the United States fire service began during its early development and maturation (Carter, 2015).

**Problem Statement**

The problem was a lack of knowledge concerning which leadership characteristics and educational levels are prevalent among senior-level fire service personnel in the United States (Wilderman, 2013). This study examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the United States fire service organizational culture. Transformational leadership is the effective leadership style for emergency managers (Wilderman, 2013). The study of leadership characteristics is becoming an increasingly important issue for organizations (Kahn, 2015).

This study was essential because educational and leadership theorists have yet to address the role of United States fire service leaders in managing information and knowledge, despite their organizational importance (Kahn, 2015). United States fire service personnel continue to respond to challenges that address changes in task and
mission (Kahn, 2015). In contrast, the absence of quality leadership negatively affects the organizations health (Quinn, 1996).

The paramilitary structure of the United States fire service, established in the 1860s, includes empowerment concepts, decentralized decision-making theories, and practical leadership characteristics (Napp, 2011). Ineffective leadership characteristics and educational levels may result in greater loss of life and property from disastrous events (Daugherty, 2012). The terrorist attack on September 11, 2001 caused leaders to understand the importance of United States fire service professional development standards (Busch & Givens, 2012). This with the renewed emphasis in readiness and response, improved leadership in the fire and emergency services became obvious (Busch & Givens, 2012).

**Purpose of the Study**

The purpose of this quantitative descriptive study was to identify the leadership characteristics and educational levels prevalent among senior-level fire service personnel in the United States. Two independent variables, leadership characteristic and educational levels, using the MLQ 5X short form was examined (Avolio & Bass, 2014). The dependent variable is the organizational culture. This study contributed to the field of knowledge through an examination of how the independent variables met the needs of senior-level fire service personnel, originating from the MLQ 5X short form (Avolio & Bass, 2014). To reach a suitable sample size based on a G*Power analysis, the study population was sent via email to 1,000 NFA/EFO senior-level students employed throughout the United States. At least 278 surveys were necessary to earn a 95%
confidence level with a margin of error of 5%. This study obtained 465 completed surveys, demonstrating a 3.3% margin of error. The research included several items:

- a full range of leadership behaviors;
- causes that set exceptional leaders apart from small ones;
- the difference between efficient and ineffectual leaders;
- an outline of the effectiveness of the organization’s leadership; and
- organizational cultures (Bass, 2013).

The benefits of higher education are an inherent part of a profession (Clark, 2015). Advantages in organizational management improve when fire service leader take professionalism seriously (Clark, 2015). One method would be to promote fire science and leadership characteristics as a discipline (Clark, 2015). Higher levels of education and understanding leadership characteristics would contribute to reducing the effects of disastrous events, as well as lowering casualties and financial costs (Clark, 2015). The organizational cadre should be aware of senior-level fire service qualities (Clark, 2015). When leaders identify and transfer the essential leadership qualities throughout the organization, the organization moves closer to directing its mission statement, values, and vision (Jolley, 2008).

**Research Questions and Hypotheses**

The problem examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the United States fire service organizational culture. Two independent variables, leadership characteristic and educational levels, using the MLQ 5X short form was examined (Avolio & Bass, 2014).
This research also identified the customary leadership characteristics and educational levels needed for senior-level fire officer positions.

Research question one, using the MLQ 5X short form, inquired if a significant correlation exist between leadership characteristics of senior-level personnel and the United States fire service organizational culture? Research question two inquired if a significant correlation exists between the level of education of senior-level personnel and the United States fire service organizational culture. Overall, organizational cultures depend on the characteristics of the leadership and education levels (Athena & Maria, 2006). The research questions and theories for this quantitative study were as follows.

R1: Does a significant correlation exist between leadership characteristics of senior-level personnel and the United States fire service organizational culture?

H10: There is no significant correlation between leadership characteristics of senior-level personnel and the United States fire service organizational culture.

H1a: There is a significant correlation between leadership characteristics of senior-level personnel and the United States fire service organizational culture.

R2: Does a significant correlation exists between the level of education of senior-level personnel and the United States fire service organizational culture?
H20: There is no significant correlation between the level of education of senior-level personnel and the United States fire service organizational culture.

H2a: There is a significant correlation between the level of education of senior-level personnel and the United States fire service organizational culture.

The research questions as related to the problem statement concerned the potential correlation between transformational leadership and the three leadership outcomes. The researcher investigated effectiveness, extra effort, and satisfaction factors. These factors determined the prevalent leadership characteristics in relationship to the business culture of the fire service for the study's population.

Advancing Scientific Knowledge

Research consisted of literature identifying the leadership characteristics and educational levels of senior-level U.S. fire service personnel that are customary for the specific leadership position. The research questions included which leadership characteristic and education levels are prevalent among senior-level fire service personnel in the United States. Leadership characteristics are critical in the U.S. fire service and a needed item for the profession to become more effective (Fox, 2009; Smeby, 2013).

The U.S. fire service is no longer an isolated profession, and higher levels of education in the senior ranks will aid in nurturing its organizational culture without outside influences (Clark, 2015). Benjamin Franklin, the father of the U.S. fire service, expressing that all education is self-education (Gardner & Laskin, 2011). Franklin, as a proponent of self-education, indicated that educations underlying relationship toward an individual’s goals must match the individual whom pursuits to achieve it (Gardner &
Laskin, 2011). Leadership characteristic research usually relates to more stable businesslike settings, making fire and emergency service leadership effectiveness difficult (Baran & Scott, 2010). Leadership researchers focus on more stable conditions, thus explaining a research gap in leadership characteristics and educational needs to meet these challenges (Baran & Scott, 2010; Fox, 2009; Wilderman, 2013). A literature gap existed because of the under focused leadership characteristics necessary for senior-level U.S. fire service personnel to succeed in creating a professional organizational culture (Alexander, 2012; Clark, 2015). Out of the one thousand NFA/EFO students identified, 465 students completed the survey using the MLQ 5X short form, presenting the results, and exam the gaps (Avolio & Bass, 2014).

Leadership characteristics and educational levels are two factors that shape the degree that individuals accurately realize and assess risk, which is a foundational need of senior-level fire service personnel (Bruegman, 2011). The citizens of the United States expect educated fire service professionals to meet society’s expectations for service excellence (Granito, 1995). Results of higher education literature becoming an integrated part of the United States fire service culture are positive (Clark, 2015). Higher education leads to a greater degree of professionalism, creditability, and competence in the United States fire service (Clark, 2015). Higher education creates new opportunities for United States fire service professionals to influence society, to become community leaders, and innovators (Clark, 2015). United States fire service leaders face challenges that will need innovative leadership (Smeby, 2013).

The nature and scope of the fire modernization agenda need an active and positive response to meet the demand for continuous improvements in standards (Smeby, 2013).
The research included awareness of leadership characteristics and education levels needs for senior-level fire service personnel and organizational success (Clark, 2015; Fox, 2009; Wilderman, 2013). The transformational leadership theory was the suitable theory for this study (Bass & Avolio, 1997).

Transformational leadership theory is a process that motivates employees by appealing to their higher ideals and moral values (Moynihan, Pandey, & Wright, 2012). Transformational leaders influence followers by advancing their goals beyond their self-interest and providing them with the confidence to achieve their objectives (Grant, 2012). This study affirms that researchers have not used educational and leadership theories to address the role of United States fire service leaders in managing information and knowledge (Kahn, 2015). Meanwhile, United States fire service personnel continue to respond to challenges that will need changes in task, and mission (Kahn, 2015).

**Significance of the Study**

The significance of this study was to identify essential leadership characteristics and educational levels necessary for senior-level fire service personnel, to create a successful businesslike organizational culture. This study’s importance aligns with the need to understand leadership characteristics and education levels for senior-level United States fire service personnel to compete in career advancement opportunities, and to strengthen their organizations presence. This study adds value to the United States fire service by detecting customary leadership characteristics and the educational levels necessary to fulfill the roles of senior-level United States fire service personnel. Roles include the rank and positions of fire chief, assistant fire chief, deputy fire chief, bureau
fire chief, and other superior-level roles found within any United States U.S. fire
department organization (Clark, 2015; Fox, 2009).

Leadership research and organizational characteristics are necessary to add to the
existing body of knowledge and to the variables that effect leaders and their employees in
this public environment (Vanderwood, 2013). Although research exists, regarding
generalized leadership characteristics and organizational culture, Vanderwood (2013)
identified that leadership characteristic for senior-level fire service personnel are lacking.
This information is modifiable to the United States fire service culture and may improve
U.S. fire service leadership and management (Alexander, 2012).

Transformational leadership is an effective leadership characteristic, as it
motivates employees by appealing to their higher ideals and moral values (Moynihan et
al., 2012). This study’s significance lies in the improvements senior-level United States
fire service individuals must accomplish to promote the United States fire service. This
study’s results may be valuable to the strategic direction and planning conducted by
United States fire service professionals.

Fire service education and training are critical and necessary to develop United
States fire service organizational culture to meet industry goals (Alexander, 2012).
Previous research includes, *Achievement Factors of Higher Education for Chief Fire
Officers*, and *Incident Command Leadership Styles*, express the need for this research
(Ditch, 2012; Fox, 2009). Fire and emergency services have gradually become more of a
profession (Cox, 2012).

Senior-level United States fire service personnel often contribute with critical
thinking skills and education that allow collaborative participation (Cox, 2012). Similar
leadership characteristic skills and education levels by city or county managers, attorneys, finance directors, and budget and human directors, all of whom must have advanced degrees in their chosen profession (Cox, 2012). Despite the importance of leadership in critical contexts, leadership knowledge is lacking in dangerous contexts, such as leading firefighters, compared to normal (non-extreme) contexts (Geier, 2014). The focus of recommended leadership behaviors within the literature is in normal contexts such as manufacturing, the financial industry, or cultural influences (Geier, 2014).

**Rationale for Methodology**

This study utilized the quantitative research method. The three common research approaches include, qualitative, quantitative, and mixed methods with various research designs common for each approach (Williams, 2011). The quantitative methodology is reliable, objective, includes relationships between variables, and incorporates cause and effect in controlled circumstances (Leedy & Ormrod, 2012). Quantitative research often includes cost-effective surveys to discover specific influences within an organization (Grohmann & Kauffeld, 2013).

Quantitative surveys are easy to manage and analyze when employing several participants (Grohmann & Kauffeld, 2013). This study was nonexperimental, as there was no control group (Trochim, 2006). This study included descriptive statistical design based on the population (McNabb, 2008). Similar studies by Cox (2012) and Wilderman (2013) employed a quantitative research methodology.

Researchers conduct quantitative research to quantify problems by producing numerical data and translating them into useable statistics (Wyse, 2011). Quantitative
research is useful for generalizing results from a larger sample and for quantifying attitudes, opinions, behaviors, and other defined variables (Wyse, 2011). Quantitative researchers use measurable data to express facts and uncover patterns in research (Wyse, 2011).

Quantitative data collection methods have more structure than qualitative data collection methods (Wyse, 2011). Quantitative collection includes online surveys, paper surveys, mobile surveys, kiosk surveys, face-to-face interviews, telephone interviews, longitudinal studies, website interceptors, online polls, and systematic observations (Wyse, 2011). Qualitative research is mainly exploratory and used to gain an understanding of underlying factors, opinions, and motivations (Wyse, 2011).

**Nature of the Research Design for the Study**

This study included a descriptive research design. A descriptive study enables the researcher to collect information without changing the environment (Leedy & Ormrod, 2012). The Office of Human Research Protections (OHRP) expresses that a descriptive study is not truly experimental (Cook, Hoas, & Joyner, 2013). In research, a descriptive study can provide information about the naturally occurring health status, behavior, attitudes, or other characteristics of a particular group (Cook et al., 2013). The descriptive approach involves collecting and analyzing rather large data sets for statistical analysis.

Descriptive research involves gathering information about prevailing conditions or for description and interpretation (Salaria, 2012). This research design does not involve amassing and tabulating facts; however, it includes properly analyzing, interpreting, comparing, and identifying trends (Salaria, 2012). A descriptive research approach is suitable when testing a specific hypothesis, defining ideas as distinct
variables, using standard procedures, and conducting analysis with statistics, tables, and figures (Harvard University, 2014).

This study included a cross-sectional approach. The descriptive design was suitable for deciding previously unknown conditions by exploring and describing possible relationships (Sahar-Khiz, 2010). The unknown conditions were whether senior-level United States fire service personnel displayed transformational leadership characteristic, and whether transformational leadership was the prevalent leadership characteristic. Because researchers know little about the leadership characteristics of senior-level U.S. fire service personnel, the descriptive design was suitable to collect information related to current conditions and practices (Cox, 2012; Fox, 2009).

Data collection procedures began with delivering the MLQ 5X short form survey instrument by email using SurveyMonkey to 1,000 NFA/EFO students (Avolio & Bass, 2014). This design of the MLQ 5X was to identify the prevalent leadership factors and translating the findings. The use of the MLQ 5X short form enabled to measure a broad range of leadership behaviors while revealing factors to discover what frames an effective or ineffective leader (Avolio & Bass, 2014). The focal point of the survey instrument was a reflection of individual leadership behavior noted by the participants (Bass, 2013). Researchers utilized the MLQ 5X short form to measure broad range of leadership behaviors from the ineffective to the practical (Avolio & Bass, 2014). The survey tool included a 5-point Likert-Type scale that signals how often the behaviors displayed:
• 0 = not at all;
• 1 = once in a while;
• 2 = sometimes;
• 3 = fairly often; and
• 4 = frequently, if not always.

Researchers have used the MLQ 5X short form in various studies to assess the effectiveness of supervisors and leaders in various settings (Avolio & Bass, 2014). Researchers have employed the MLQ 5X short form in more than 30 different countries, having evaluated leadership effectiveness (Avolio & Bass, 2014). The MLQ 5X has been the primary measurement tool used in research on multifactor leadership theory (Yukl, 2012).

Definition of Terms

The following terms and phrases appear in this study.

**Descriptive statistics.** Measurements or numbers used to summarize or describe data sets. To present quantitative descriptions in a manageable form, descriptive statistics are used. (McNabb, 2008).

**Educational level.** Educational levels are the act or process of acquiring knowledge from a wide range of institutions. Providing study beyond the level of secondary education, such as colleges, and universities, and generally preparing oneself or others intellectually for mature life (Education, n.d.).

**Fire service.** An organization comprised of trained personnel, apparatus, and equipment purposed to guard property and preserve public safety and welfare from the dangers of fire. The executive level position serves as the head of the Fire Department
and assumes total management responsibility for the overall management. This position reports to and serves at the discretion of the Board of Directors. (U. S. Legal, 2013).

**Idealized influence.** Leaders with idealized influence act in ways that make them role models. Followers respect, admire, and trust them. Followers also identify with such leaders and describe them in terms that indicate extraordinary abilities, persistence, and determination. Such leaders are willing to take risks, and followers should be able to consistently do the right thing and to display high moral and ethical standards (Avolio & Bass, 2014).

**Individualized consideration.** Transformational leaders with individualized consideration act as mentors and coaches. Such leaders respect individual desires and needs, accept differences, and frequently use two-way communication. These leaders are good listeners and develop personalized interactions. Followers of leaders move toward developing higher levels of maturity (Avolio & Bass, 2014).

**Laissez-faire leadership.** Laissez faire leaders try to give the least possible guidance to subordinates and try to achieve control through less obvious means. Laissez-faire leaders believe that people excel when left alone to respond to their responsibilities and obligations themselves (Avolio & Bass, 2014).

**Multifactor Leadership Questionnaire (MLQ).** Researchers use the MLQ 5X short form to evaluate three different leadership styles: transformational, transactional, and passive-avoidant. Individuals use the Leader/Self form to measure perception of themselves for specific leadership behaviors. The heart of the MLQ 5X short form is the rater/other feedback enabled with the Rater form (Avolio & Bass, 2014).
Organizational culture. Organizational culture is a complex issue, which principally includes groups having common values, outlooks, principles, expectations, and behaviors (Tharp, 2009). Organizational culture is an arrangement of basic assumptions, which the group learned over time, and as it solved its problems of peripheral adaptation, and internal incorporation and works well for their individual culture. New members learn this system of procedures as the correct way to perceive, think, and feel in relation to those problems (Schein, 1985).

Passive-avoidant leadership. The passive-avoidant leader takes corrective action only after a problem becomes significant. This leadership method could be a transformational leader quality when the leader purposely aims to allow followers learn from making mistakes (Avolio & Bass, 2014).

Transactional leadership. Transactional leaders display behaviors associated with constructive and corrective transactions. Transactional leadership defines expectations and promotes performance to achieve higher levels. Transactional leadership includes setting clear objectives and goals for the followers as well as the use of either punishments or rewards in order to encourage compliance with realistic goals (Avolio & Bass, 2014).

Transformational leadership. A form of leadership that occurs as leaders promote awareness and acceptance of the purposes and the mission of the group and as motivated employees look beyond their own self-interest for the good of the group. Transformational leaders focus on a collective vision and seek to communicate it effectively to all employees (Avolio & Bass, 2014).
Assumptions, Limitations, and Delimitations

Researchers use assumptions to describe theoretical and methodological suppositions (Simon, 2011). Assumptions are items accepted as true, or at least plausible, by researchers and peers (Simon, 2011). The assumption of this study was that all of the respondents would answer the questionnaire truthfully (Simon, 2011). The researcher assumed respondents would truthfully represent themselves as senior-level United States fire service individuals. The researcher also assumed that previous research, as well as the assertions made by previous researchers based on their findings, was accurate.

Limitations are impediments to explain the internal or external truth of a study (Simon, 2011). First, the study included a purposeful sampling method that limited statistical analysis to support the study theories (Simon, 2011). Second, the sample included only senior-level United States fire service personnel and those identified as participants from the NFA/EFO Program. This target group displayed a gap in research. Third, the study only involved evaluating the transformational, transactional, and passive-avoidant leadership styles identified in the MLQ short form (Avolio & Bass, 2014). A final limitation of this research methodology was the relative limited experience of the researcher in performing quantitative research.

Delimitations are those characteristics that limit the scope and define the boundaries of the study (Simon, 2011). Delimitations are important; bridging the universe of information makes a study possible (Simon, 2011). Delimiting factors include the choice of objectives, the research questions, variables of interest, theoretical perspectives, and the population chosen to investigate (Simon, 2011).
The participants remained anonymous, and their participation was voluntary, which enabled them to end participation. Transformational leadership characteristics positively correlate with leadership effectiveness (Avolio & Bass, 2014). Effective leaders should present transformational leadership characteristics, and leaders who display transformational leadership characteristics are transformational and competent leaders (Sadeghi & Pihie, 2012).

The researcher selected senior-level United States fire service personnel because there was a gap in research of education and leadership characteristics in leaders. Even though the MLQ 5X short form is suitable for measuring transformational, transactional, and laissez-faire leadership, the study involved only transformational leadership (Avolio & Bass, 2014). Concerning generalizability, there are enough participants to provide a narrow and concise response to each research question. The NFA/EFO senior-level fire service personnel are uniquely familiar with survey seeks and take part scholastically. Generalizability of the study focuses on measurements rather than treatments, thus providing deductive reasoning used to combine the data (Simon, 2011).

**Summary and Organization of the Remainder of the Study**

Chapter 1 included an introduction to the leadership characteristics and educational levels of senior-level fire service personnel in the United States. These are critical foundations for individuals responsible for significant group interpersonal dynamics, for readiness, and for providing safe measures in communities (Foster, Nollette, & Goertzen, 2011). Prior to this study, leadership characteristics and educational levels among senior-level United States fire service personnel in the United States was unknown (Wilderman, 2013). Individuals must receive training and education
to master the fire service profession (Daugherty, 2012). Leaders need to understand what factors influence to achieve leadership characteristics and higher education to understand the United States fire service profession (Smeby, 2013).

Leaders in high-reliability organizational contexts such as firefighting, emergency medicine, and law enforcement must often make sense of environments that are dangerous, ambiguous, and rapidly changing (Smeby, 2013). The focus of leadership research has been on stable conditions (Baran & Scott, 2010). A gap existed in the leadership characteristics and educational requirements in the United States fire service (Baran & Scott, 2010). Leadership characteristics and educational levels are two factors that may shape how individuals realize and assess risk, which is a foundational requirement of senior-level United States fire service personnel (Bruegman, 2011).

The results of higher education literature becoming an integrated part of the United States fire service culture are positive (Clark, 2015). Higher education gives a greater degree of professionalism, credibility, and competence (Geis, 2012). It creates new opportunities for fire service professionals in becoming community leaders, and fire service innovators (Geis, 2012). Numerous members of the fire service have explored higher education while attending the NFA/EFO program (Geis, 2012). Leaders of the National Fire Academy support the idea of increased educational needs for each position in the organizational hierarchy as part of the national professional development model (Geis, 2012; USFA, 2010). This study included two research questions. First, does a significant correlation exist between leadership characteristics of senior-level personnel and the United States fire service organizational culture? Second, does a significant correlation exists between the level of education of senior-level personnel and the United
States fire service organizational culture? The MLQ 5X short form was suitable for collecting the quantitative data necessary to determine whether transformational leadership is the strongest and prevalent leadership characteristic (Avolio & Bass, 2014). Chapter 2 includes a comprehensive review of the literature. Chapter 2 includes the theoretical framework topics: (a) transformational leadership, (b) transactional leadership, (c) transformational versus transactional leadership, (d) the four I’s of transformational leadership, and (d) the full range of leadership model. Chapter 3 includes a description of the method, research design, and procedures used for the investigation. Chapter 4 includes the data analysis and a written and graphic summary of the results of this study. Chapter 5 includes an interpretation and discussion of the result of the study.
Chapter 2: Literature Review

Introduction to the Chapter and Background to the Problem

This study examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the U. S. fire service organizational culture. The purpose of this quantitative descriptive study was to identify the leadership characteristics and educational levels prevalent among senior-level fire service personnel in the United States. This chapter includes the theoretical foundation and the review of literature for leadership characteristics and educational levels. The literature review topics include:

- theoretical foundations;
- leadership in the fire service;
- transformational, transactional and outcome of leadership characteristics;
- the four I’s of transformational leadership;
- the history of higher education in the fire service;
- training and education;
- professional development; and
- methodologies.

The literature review involved examining relevant literature using the Columbia Southern University Online Library, various humanities and social science texts, the Journal of Emergency Management, National Fire Protection Association codes, and associated journals and dissertations. Research for leadership theories and models also involved using Google Scholar. The literature review began with a search for leadership concepts related to the fire and emergency service profession and refined to include
leadership characteristics and educational levels for senior-level fire service personnel. This literature review is significant because it includes the context for the study, leads to identifying gaps in the literature, and entails a comprehensive review of information suitable to the study under investigation (Denyer & Tranfield, 2015).

The United States fire service has a long history of identifying critical leadership and education-level needs (Carter, 2015). The United States fire service leaders recognize that the fire service is no longer an isolated profession that nurtures a unique culture without outside influences (Carter, 2015). United States fire service leaders should no longer be separate from instilling best practices in emergency medicine, dangerous materials, or terrorist threats (Connolly, 2012). Education is an experiential service in which the active involvement of both the service provider (higher education) and the consumer (student) is necessary (Khanna, Jacob, & Yadav, 2014). In order to understand the United States fire service profession, leaders needed to understand the factors that influence developing the profession around higher education achievement (Smeby, 2013).

Leaders in high-reliability contexts such as firefighting, emergency medicine, and law enforcement often face the challenge of making sense of environments that are dangerous, ambiguous, and rapidly changing (Smeby, 2013). Countless leadership researchers focused more stable conditions, thus leaving a gap regarding the leadership characteristics and educational wants needed to meet challenges (Baran & Scott, 2010). Leadership characteristics and education levels are two factors that may shape the degree to which individuals accurately note and assess risk, which is a foundational need of senior-level United States fire service personnel (Bruegman, 2011).
Increasing higher education for firefighters is one-way to respond to new demands and challenges in the U.S. fire service (Geis, 2012). United States fire service leaders are looking to improve their professional image by seeking higher education to support the work of the United States fire service (Wæraas & Byrkjeflot, 2012). Similar to generational changes, this may create a dangerous shift in the traditional trade or the paramilitary structure of the United States fire service (Wæraas & Byrkjeflot, 2012). A postsecondary education is an increasingly frequent recommendation for those entering the U.S. fire service profession (Wæraas & Byrkjeflot, 2012). Several fire service professionals are seeking higher education either for their enrichment or because of the growing number of departments wanting advanced degrees for promotion (Wæraas & Byrkjeflot, 2012).

**Theoretical Foundations**

The theoretical foundation was the full range leadership model and theory (Bass, 1990). In the full range leadership model, Bass (1990) proposed that transformational leadership is the effective leadership style in circumstances. Knowing the effective leadership characteristic for senior-level United States fire service personnel may help to identify and promote the prevalent leadership characteristics (Bass, 1990). The strength of the theoretical framework leadership characteristics positively affects leaders and followers (Bass, 1990). Knowing the theoretical framework affects positive results in leader and follower initiative, creativity, and proactivity (Avolio & Yammarino, 2013). The research questions for this study aligned with the full range of leadership model because answering them revealed which leadership characteristics and education levels are prevalent in the U.S. fire service (Ditch, 2012).
**Organizational culture.** Organizational culture, is an organizational asset, and progressively assumed and used to increase businesslike performance (Tharp, 2009). Research concludes that the dialogue on organizations with similarities of a distinct physiological under tone is inconclusive (Allaire, & Firsirotu, 1984). Organizations experience life cycles that are overwhelmed with challenging health and persistent selection processes (Allaire, & Firsirotu, 1984). An organization culture concept expresses culture norm, and often treated as an inherent characteristic of any culture (Allaire, & Firsirotu, 1984). Organizational culture and associated conceptions are of the ideational kind and shift significantly (Allaire, & Firsirotu, 1984). Organizational culture encompasses culture bearers, theories, and symbolic products (Allaire, & Firsirotu, 1984). Organizational culture is dynamic, with a set of purposeful understandings (Allaire, & Firsirotu, 1984).

Different grades of values, norms, roles, and expectations characterize organizations (Allaire, & Firsirotu, 1984). The grade meanings are the fabric with unique arrangements of the organization’s history, the definitions of situations, and the members’ organizational interpretation (Allaire, & Firsirotu, 1984). Organizational culture identifies a perception for which practical measures must be developed (Schein, 1990). From this perspective, organizational culture, as a property of individuals, and measured by questionnaires, leading to Likert-type profiles (Schein, 1990).

Organizational culture is what a group learns over a time (Schein, 1990). The group learns simultaneously an interactive, intellectual, and a passionate process (Schein, 1990). In contrast, Grissom, Viano, and Selin (2015) explained that although the settings and salient organizational cultures may differ, the general principle that some
organizations are more work culture positive applies to turnover decisions in the public sector. Positive organizational experiences increase the commitment of public sector employees and lower turnover intention (Grissom, Viano, & Selin, 2015). Research on public sector employee retention is often associated with certain management styles, such as transformational leadership or participative management (Grissom, Viano, & Selin, 2015).

**Transformational leadership.** Transformational leadership is a leadership approach that leads to change in individuals and social systems (Avolio & Yammarino, 2013). Burns (1978) first introduced the concept of transforming leadership in his descriptive research for political leaders; researchers also use the term in organizational psychology and business (Avolio & Yammarino, 2013). Burns (1978) indicated that transforming leadership is a process in which leaders and followers help one another to a higher morale and motivation (Avolio & Yammarino, 2013). Burns (1978) associated the difficulty in distinguishing between management and leadership and claimed the differences are in characteristics and behavior (Avolio & Yammarino, 2013).

**Transactional leadership.** The focus of the transactional leadership characteristic is preserving the normal flow (Ingram, 2015). Transactional leaders use disciplinary power and an array of incentives to motivate employees to perform at their best (Ingram, 2015). The term transactional refers to this leader essentially motivates subordinates by exchanging rewards for performance; both the transformational and transactional leadership styles are necessary to guide an organization to success (Ingram, 2015). Transactional leaders provide distinct advantages through their abilities to address details quickly (Ingram, 2015).
Outcomes of leadership. The employment of the MLQ enables researchers to identify scores for three outcomes of leadership including extra effort, effectiveness, and satisfaction (Avolio & Bass, 2014). Extra effort refers to motivation, how the leader recruits others to try harder and achieve results beyond expectation (Avolio & Bass, 2014). Effectiveness refers to meeting others’ job related needs and interacting at different levels of the organization (Avolio & Bass, 2014). Satisfaction refers to how satisfied raters are with their leader’s methods of working with others (Avolio & Bass, 2014). The employment of the three MLQ leadership outcomes scores determined the senior-level fire service effectiveness (Avolio & Bass, 2014). Several studies have included the outcomes of leadership within the MLQ to measure leadership effectiveness (Avolio & Bass, 2014).

Transformational leadership theory is the suitable businesslike leadership trait (Moynihan et al., 2012). Transactional leadership is a process in which leaders motivate employees by appealing to their higher ideals and moral values (Moynihan et al., 2012). Transformational leaders influence followers by increasing their goals beyond the followers’ self-interest and providing the followers with the confidence to achieve their objectives (Grant, 2012). The issue arose when affirming that researchers have not used educational and leadership theories to address the role of United States fire service (Kahn, 2015).

This study fits with other research that included the full range leadership model and theory (Bass, 1990). Using transformational leadership in emergency management may result in personnel adapting more easily and more quickly to the rapidly changing circumstances that are common during disaster events (Wilderman, 2013). Forthcoming
studies must consider identifying if transformational leadership is prevailing for emergency managers and other types of organizations (Wilderman, 2013).

The researcher used the full range leadership model (Bass, 1990). Examined are the leadership characteristics and education levels of 465 senior-level U.S. fire service NFA/EFO students, of 1,000 surveys delivered. This study examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the U. S. fire service organizational culture. The research involved discovering the leadership characteristics and educational levels needed for senior-level United States fire service personnel and supervisory positions.

Review of the Literature

The literature review includes prior research related to the two independent variables for this study (leadership characteristics and educational levels) for senior-level fire service personnel and supervisory positions in the United States. By achieving higher levels of education and understanding, leadership characteristics amass as contributing factors to reduce the effects of disastrous events and result in lower casualties and financial costs (Clark, 2015). Failing to meet challenges may result in higher levels of incompetence and extraordinary expenses from catastrophes (Clark, 2015).

Leadership. Leadership is a matter of noticeable actions and of perceptions by employees, who interpret what takes place in organizations (Atwater & Yammarino, 1997). Individuals in a leadership role need to have a thorough understanding of organizational culture, its nature, and impact, so that they can communicate new vision and ensure followers’ commitment to that vision (Sharma, 2010). Theoretically, leadership precedes actions taken by leaders (Avolio, Bass & Jung, 1999; Bass & Riggio,
Leadership action is difficult to observe (Bass, 1990). Measurement takes place by asking leaders and employees about their perceptions (Avolio et al., 2009; Bass & Riggio, 2006). Leaders usually adjust their leadership behavior to accomplish the mission of the organization, which influences the employees' job satisfaction (Tsai, 2011). This becomes essential to understand the relationship between organizational cultures, leadership behavior, and job satisfaction of employees (Tsai, 2011).

**Fire service leadership characteristics.** Fire leaders identified leadership characteristics required at different ranks in the fire service (Feuquay, 2010). Ethics, interpersonal and communication skills, decision-making skills, customer service and technical expertise are necessary attributes regardless of rank (Feuquay, 2010). A substantial proportion of respondents believed that leadership characteristics normally associated with higher ranks, such as strategic thinking, and government relations (Feuquay, 2010).

Effective leadership provides higher quality and efficient goods and services and offers a sense of cohesiveness, personnel development, and higher levels of satisfaction among those conducting the work (Tummers & Knies, 2013). An overarching sense of direction and vision results from an alignment with the environment, a robust mechanism for innovation and creativity, and a resource for invigorating the organizational culture (Tummers & Knies, 2013). Leaders in high-reliability, organizational contexts such as firefighting, emergency medicine, and law enforcement often face the challenge of making sense of environments that are dangerous, ambiguous, and rapidly changing (Baran & Scott, 2010).
Leadership in the United States fire service began in 1971, when Congress funded forming the National Commission on Fire Prevention and Control (1973) to study the fire problem and recommend (National Commission on Fire Prevention and Control, 1973). The National Commission on Fire Prevention and Control noted the principal concern was the destructive effects of life and property caused by a fire (National Commission on Fire Prevention and Control, 1973). Encompassed in the report was a recommendation to set up the USFA, charge its staff with providing a national fire focus, and promote a comprehensive fire safety (National Commission on Fire Prevention and Control, 1973). This research includes several shortages in fire service leadership, including a lack of training and leadership (National Commission on Fire Prevention and Control, 1973). The NFA/EFO Program based on the National Commission on Fire Prevention and Control Act had developed in early 1980 (Carter, 2015). The mission of the National Fire Academy is to provide leadership, education, coordination, and support for the nation’s fire problem (Carter, 2015).

The U.S. fire service paramilitary structure includes persuasive ideas, decentralized decision-making theories, and practical leadership characteristics (Napp, 2011). Leaders use clearly defined organizational structures and systems similar to business corporations to manage fire departments (Smeby, 2013). United States fire service leaders and human resource professionals identified leadership characteristics needed at different ranks in the fire service (Tuckey, Bakker, & Dollard, 2012). Ethics, interpersonal and communication skills, decision-making skills, customer service, and technical expertise emerged as necessary regardless of rank (Tuckey et al., 2012).
Leadership characteristics normally associated with higher rank include strategic thinking, team development skills, community and government relations, a vision of the future, and incident management techniques (Geis, 2012). The rank of fire captain is a point of transition in the leadership pipeline (Tuckey et al., 2012). The necessary skills are consistent with those of higher rank; however, fire captains’ concerns remain with those of lower rank (Tuckey et al., 2012). The transition is a challenge when individuals assume this level of command without proper preparation and professional development (Bruegman, 2011). Leadership is essential for disaster and emergency intervention, particularly for mass casualty incidents and for building the resilience of the community (Norman & Binka, 2015). Education is an established approach for developing new leaders and improving the capacities of existing leaders (Norman & Binka, 2015).

Managing routine emergencies and major catastrophes needs a broad array of leadership and management competencies (Tuckey et al., 2012). The goal is to devise policy and to set up programs that reduce vulnerability, limit the loss of life and property, and improve coordination in disasters (Demiroz & Kapucu, 2012). United States fire service leadership and disaster management complement one another (Demiroz & Kapucu, 2012). Leaders must respond to the threats and misgivings that stem from crises returning to normal (Demiroz & Kapucu, 2012).

Leadership is one of the essential aspects of successfully managing emergencies and crises (Tuckey et al., 2012). When leading during times of disasters, along with legitimacy and trust, leaders employ a sense of urgency in their decision-making strategies (Bruegman, 2011). Three concepts crisis leaders need to avoid reform-induced crisis (Tuckey et al., 2012). First, leaders need to develop a crisis management
philosophy to help negotiate the inherent difficult of reparation and reform (Tuckey et al., 2012). Second, leaders should not push reform without considering opposite arguments (Tuckey et al., 2012). Crisis used to ignore critics will mobilize their opposition when their performance is already under scrutiny (Tuckey et al., 2012). Third, crisis-induced reform creates exceptional challenges for the long-term (Tuckey et al., 2012).

Leading before, during, and after a crises requires different competencies and traits than other types and characteristics of leadership require (Demiroz & Kapucu, 2012). Catastrophic disasters and routine emergencies require different leadership patterns, as leaders need to manage surprises that are prominent in catastrophes (Demiroz & Kapucu, 2012). Although interrelated, leadership and management also incorporate different strategies for interacting effectively with subordinates; although researchers commonly use the terms management and leadership synonymously, both skills are unique (Boomer, 2012).

Leadership is influencing others to follow willingly and management is the ability to achieve objectives with the resources available (Young & Dulewicz, 2008). Leaders enable relational communication and a positive work environment and focus in planning, coordination, and supervision (Vaccaro, Jansen, Van Den Bosch, & Volberda, 2012). Management involves delivering limited resources to carry out best organizational objectives; whereas, leadership involves developing and cultivating a shared vision (Vaccaro et al., 2012). Management aims for order and stability; leadership focuses in positive change and adaptation (Schaubroeck, Peng, & Hannah, 2013). Leadership must cope with change more than management (Manning, 2012). Management research model
includes setting the organizational direction, aligning personal relationships, and motivating the workforce (Manning, 2012).

Leadership plots the course for an organization (Schaubroeck et al., 2013). The impetus for adjustment may be internal challenges, or unforeseen circumstances; leaders also strive to adapt through effective strategies (Schaubroeck et al., 2013). Promoting change is significant. The leader’s role is to ensure interpersonal relations and a positive work environment (Schyns, Maslyn, & van Veldhoven, 2012). United States fire service leaders must have sound knowledge and proven expertise in all emergency management phases (Caro, 2015). United States fire service leaders must understand the basis of legal and sociopolitical contexts (Caro, 2015). Cognitive skills, such as strategic and systems thinking in the face of complexity and pressing misgiving, were critical (Caro, 2015). Leader informants repeatedly stressed the need for strategic leadership in building and collaborating networks of diverse professionals and community stakeholders to ensure trust and respect (Caro, 2015).

Newly appointed United States fire service leaders have the opportunity to effect change; however, the change will not come easily (Scarpa, 2012). The chief officers and other company leaders will have to lead the United States fire service through economic turmoil and past uncertainties (Scarpa, 2012). As visionaries, United States fire service leaders must look past the immediate challenges and strategically plan to position the organization for the future (Scarpa, 2012). Leaders who are visionaries should expect the challenges that may affect their departments (Scarpa, 2012).

Fire departments have a vital role in protecting the lives of citizens (Clark, 2015). Fire officers need to understand the importance of employees’ commitment to increasing
United States fire service performance and productivity (Clark, 2015). Saving lives involves having skilled leadership characteristics and officers who are responsible for directing public safety operations (Clark, 2015). United States fire service leaders must understand the contribution toward firefighter development (Carter, 2015). Firefighters must receive encouragement and rewards for taking calculated risks rather than doing tasks routinely (Carter, 2015). Leaders also readily accept their responsibilities toward their subordinates’ professional development by ensuring firefighters have suitable skills and abilities (Carter, 2015). United States fire service leaders must provide the necessary amount of coaching and training ensuring to have sufficient freedom to feel the assignment is theirs (Geis, 2012).

When times were less turbulent, fire department leaders could plan their fire department strategic plans, which usually remained viable throughout the relevant period (Smeby, 2013). As the rate of change has heightened, strategic planning, including leadership development, has dramatically decreased (Smeby, 2013). The challenge is to model the way by providing firefighters the necessary information and support for them to make the informed decisions required for organizational success (Cox, 2012).

The United States fire service leads by example (Douglas, 2013). Leadership refers to the actions and words of the leaders that have a direct impact on the subordinate’s interactions and with other leaders and the community (Douglas, 2013). By leading efficiently, the person in charge will set an example by displaying values and qualities (Jolley, 2008). Respect, sincerity, integrity, and character will express more than mere words (Jolley, 2008).
Astute United States fire service leaders focus on solvable problems and prioritize elements in a short amount of time (Smeby, 2013). Perceptive United States fire service leaders must be able to delegate responsibility effectively, manage the span of control, communicate clearly, and keep a level head (Smeby, 2013). United States fire service leaders needed to place themselves in the position of all stakeholders, including the victims, and recognize their diverse needs (Van Wart, 2014). The United States fire service leaders who place more value in their people management skills may well focus their attention in their team, stakeholders, and operational partners (Ditch, 2012). Those who value their logical and analytical skills may pay more attention to problem analysis, set priorities decision making, and solution delivery (Ditch, 2012).

Leaders who are task-oriented on human-relations sometimes reach the point that neglect human relations altogether (Selznick, 2011). These are the professional and technical expertise a leader holds (Selznick, 2011). The training received including simulations and exercises; and the range of real incidents attended (Selznick, 2011). Possession of the skills and qualities do not affect leader effectiveness by themselves (Maxfield & Fisher, 2014). Their skillful combination and focus at the right time in the right way makes the difference (Maxfield & Fisher, 2014). Disasters are reminders of the vulnerability of communities (Kapucu, 2015). Calamities harm communities and individuals and disrupt social and technical systems and community functions (Kapucu, 2015). Engaging the stakeholders in the whole community, as well as having effective public leadership, will make a significant difference in the effectiveness of disaster recovery and response (Kapucu, 2015). People look for strong leadership traits such as goal oriented, competency, expertness of skills with drive and ambition from United
States Fire Service leaders (Hayes, 2013). The chief fire officer and the senior-level U.S. fire service supervisor have command rights and power (Hayes, 2013). Managing leadership characteristics, versatility, and explanatory power will separate the leaders without followers from the leaders who have earned followers’ trust and who can achieve a common goal (Hayes, 2013).

The United States fire service is no different from any other profession, in that it needs strong leadership (Napp, 2011). Leaders in the United States fire service traditionally led with a paramilitary style (Napp, 2011). While this method may have its place during times of quickly changing environments, perhaps not suitable for the overall leadership model (Kupietz, 2010).

**Leadership research.** Leadership remains one of the oldest domains of management research (Stackman & Devine, 2011). Research includes the link between managerial leadership to positive consequences for both individuals and organizations, including financial performance (Rubin & Dierdorff, 2011). Substantial evidence explains that sound managerial leadership practice is critical to creating effective organizations (Rubin & Dierdorff, 2011).

There are as many definitions of leadership characteristics as there are the people who have defined the idea (Bass, 1990; Burns, 1978). Leadership is one of the followed and least understood phenomena (Bass, 1990; Burns, 1978). All the confounding areas in social psychology, leadership theory contends for the top nomination - more has been written and less known about leadership than other topics in the behavioral sciences (Bennis, 1959). These issues signal that understanding and defining leadership is a complex process that several researchers took to address but none successfully resolved.
Leadership characteristics are vital elements in the United States fire service and a necessary item for the profession to become more dynamic and effective (Cox, 2012).

Common leadership characteristics are traits and skills, leader behaviors, and leader attributions of followers (Van Wart, 2014). Trait and skill characteristics include inherent and early-learned proclivities, such as resilience, and talents, such as social skills (Obschonka, Silbereisen, & Schmitt-Rodermund, 2015). Behaviors include the generalized abilities to cope with common leadership situations as well as the personality characteristics, motivations, and values of leaders that promote success (Obschonka et al., 2015). Education, training, and experience affect behavior characteristics more than traits and generalized skills do (Barrick, Mount, & Li, 2013). Leader attributions include leaders’ estimation of followers’ competence, dedication, and loyalty (Barrick et al., 2013). Everyone has the potential to lead, and leadership skills are developable (Lussier & Achua, 2015).

Leaders inspire and develop future leaders (DuBrin, 2015). Developing staff involves improving subordinates’ effectiveness in their current positions and preparing them for their next position (DuBrin, 2015). The three major elements in developing staff are supporting, coaching, and mentoring (Van Wart, 2014). Support is the emotional item of development, which may include supporting individuals in higher educational opportunities (Van Wart, 2014). Coaching helps employees do a task more efficiently, even after employees had received their initial training, and are aware of the standards leaders expect (Van Wart, 2014).
The primary responsibility to improve performance, accuracy, and presentation lies with employees (Van Wart, 2014). Employees share the responsibility with the superior, whose job is to provide intermittent on-the-job training and suggestions (Van Wart, 2014). Mentoring refers to supporting a person’s career and at times referred to career counseling (Van Wart, 2014). Mentoring involves providing culture advice of the organization and the profession, the right job-related decisions to make, and the best way to interpret significant issues or concerns (Van Wart, 2014). Mentors also act as models of successful or ideal performance or behavior (Van Wart, 2014). Leaders must find creative ways to solve complex public safety service problems (Van Wart, 2014).

Leadership skills are critical in identifying new methods of service delivery, addressing the ethical problems that arise, and engaging the public (Bowman, West, & Beck, 2014). The United States fire service leadership literary sources are representative of the existing leadership continuum (Bruegman, 2011). There are extreme variances when defining leadership and explanations surrounding the ideas, behaviors, and characteristics (Bruegman, 2011). Some sources recognized leadership as a process of influencing people to achieve a common goal and described fundamental concepts behind leadership styles (Cox, 2012). A comprehensive discussion including effects of leadership on individual performance, and leadership as a means of improving group performance, is important (Napp, 2011). The leadership literature with a public-sector focus comprises a fraction of that in the private sector, but remains unfocused (Van Wart, 2014).

**Transformational leadership.** Previous research concerning leader and follower includes a transactional leadership focus (Bass, 1990). Even when their leadership styles were the highest level of transactional leadership, it is hard to explain why certain leaders
are more successful than others are (Antonakis et al., 2011). Transformational leadership is a higher order of leadership than transactional leadership (Antonakis et al., 2011). Transactional leadership is a part of transformational leadership and pointed out leaders who are mainly transactional could present transformational leadership traits (Antonakis et al., 2011).

Transformational leadership must include transactional leadership; however, transactional leadership might not include transformational leadership (Bass, 1990). Bass (1990) organized the three leadership characteristics by conducting research and focusing on the formation of the leadership model from the effective to the least effective. Transformational leadership is the dynamic characteristic, followed by transactional leadership, and ending with passive-avoidant leadership (Bass, 1990). This order of leadership characteristics comprises the leadership characteristics along the full range leadership model (Bass, 1990). Explanatory models of transformational leadership, as organized and defined in the full range leadership model, are applicable in all leadership instances (Antonakis et al., 2011). There three distinct corollaries of transformational leadership theory, with the first having a hierarchy of leadership characteristic (Bass, 1997).

Transformational leadership characteristic is the effective leadership style, transactional leadership is in the middle, and passive-avoidant leadership is the least effective leadership characteristic (Burns, 1978). The second corollary is that a one-way expansion effect exists in that transformational leadership affects transactional leadership positively rather than transactional affecting transformational leadership (Burns, 1978). The third corollary was that regardless of the culture examined, the leadership prototypes
and ideas of any culture are the same as those of transformational leadership (Burns, 1978). Transformational leadership included visionary leadership (Bass, 1990). Transformational leadership emphasizes future vision and mission (Bass, 1990). A focus in transferring vision, not allotting responsibilities; arouses motive and inspiration; and not controlling and solving problems (Yang et al., 2011). Transformational leadership involves influencing organizational members, awarding members with independence to complete goals, allowing members to produce significant attitude change, and progressing toward the organization mission or goal (Yang et al., 2011).

Leaders who engage in transformational leadership behaviors experience positive results from their followers and note higher levels of intrinsic motivation, increased levels of performance, and higher job satisfactions (Alyn, 2011). Developing effective United States fire service leaders and keeping firefighters motivated is critical to the future of the United States fire service industry (Alyn, 2011). Researchers have confirmed that organizational commitment is an important reason in producing high levels of motivation with United States fire service employees, and advanced education and training levels (Alyn, 2011).

Contrary to transactional leadership, transformational leadership does not rely on financial rewards alone, which works well for volunteers, as monetary rewards are not normally a tool available to leaders (Verlage, Rowold, & Schilling, 2012). In the public, concentrating on leadership only as a medium for carrying out the change in the successful way possible is not enough; transformational leadership should aim at democratic norms and the role of citizens in both defining and succeeding shared aims (Peters, 2014). Transformational leadership requires leaders to understand and support
followers’ needs (Peters, 2014). Leaders must demonstrate integrity and trustworthiness to succeed with organizational transformation and change, as well as democratic values, citizenship, and service in the public interest (Peters, 2014).

Transformational leaders perform as role models and create employee trust (Nica, 2013). Followers then are encouraged to challenge old presumptions about organizational problems and practices, and adjust employee views of goal significance and transparency (Nica, 2013). Transformational leadership is one factor that plays an important role in improving organizational performance (Gelard, Boroumand, & Mohammadi, 2014). A significant reason that influences the leadership characteristic, transformation, and knowledge is a valuable measure that leaders can use to help the organization achieve success (Zhang, Wang, Cao, Wang, & Zhao, 2012). Transformational leadership plays an important role in smoothing the way for gaining success in any scheme within a company, and is a critical item of organizational success (Mahmoudsalehi & Moradkhanejad, 2012).

Leadership in fire and emergency services resembles leadership in public disciplines; however, is different from leadership in social service agencies, financial agencies, or public works agencies (Karaca, Kapucu, & Van Wart, 2012). Transformational leadership characteristics change based from experiencing disastrous events, needing leaders to change their behaviors (Karaca et al., 2012). The difference between good and great leaders is the transformational element (Karaca et al., 2012).

The four I’s of transformational leadership. The four I’s of transformational leadership are four behavior factors presented by transformational leaders, as defined by Bass (1990). The behavior factors are (a) idealized influence, (b) inspiration, (c)
intellectual stimulation, and (d) individualized consideration (Bass, 1990). The four factors distinguish transformational leaders from transactional leaders (Bass, 1990).

*Idealized influence.* Idealized leaders display conviction for believed issues (Bass, 1990). Idealized influence highlights the importance of trust, purpose, ethics, and commitment. Followers admire, respect, trust, identify, and follow leaders (Bass, 1990). Idealized influence consists of two forms. First, idealized influence attributed, in which leaders receive trust and respect. Second, idealized influence behavior, which leader’s present good behavior and might sacrifice their needs to improve the objectives of their workgroup (Sadeghi & Pihie, 2012). Idealized influence could also be similar to charisma (Bass, 1990). Charisma differs from idealized influence in that idealized influence refers to a good factor that considers effects beyond those of self-interest (Lin, Huang, Chen, & Huang, 2015). Confidence influence how strongly followers embrace the visions of the leaders (Strom, Sears, & Kelly, 2014).

Idealized influence includes how leaders behave for the positive emotional effect on the followers (Mayer, Aquino, Greenbaum, & Kuenzi, 2012). Employees are more willing to follow transformational leaders because are emotionally and intellectually more appealing the (Bass, 1990). Leaders earn credit with followers and consider followers’ needs (Owens & Hekman, 2012). The leaders share risks with followers and are consistent in their conduct with underlying ethics, principles, and values (Owens & Hekman, 2012).

*Inspiration.* Leaders who display inspiration have a vision of the future and communicate this vision to their followers, who then adopt it for themselves (Bass, 1990). Transformational leaders set an example of the highest standards and levels of
performance that are expected from their followers and present confidence and
determination (Bass, 1990). Followers work to meet their leaders’ high expectations;
motivated to put their self-interests aside for the larger, shared vision (Hughes, 2014).

Transformational leaders can create a vision of the future that motivates and
inspires followers and fosters organizational change (Moynihan et al., 2012). Bass (1990)
indicated that inspirational leaders attract followers; people have a general desire to
follow leaders who inspire them. The collective behavior of work groups discovers
consistency in performance over time (Yukl, 2012). Workers who share a similar vision,
understand the goals, and know the objectives (Yukl, 2012). Workers who are subject to
a more process-oriented management characteristic display improved performance (Yukl,
2012). Leaders behave in ways that motivate those around them by providing meaning
and challenge to their followers’ work; individual and team spirit improves; and
enthusiasm and optimism result (Yukl, 2012).

Intellectual stimulation. Intellectual stimulation draws from leaders who
challenge their followers to be creative and question their and others’ assumptions and
beliefs (Bass, 1990). Transformational leaders encourage their followers to adopt new
perspectives and express their ideas and factors without fear of retribution (Bass, 1990).
The followers then become more creative and innovative (Bass, 1990). Intellectual
stimulated individuals become more efficient in developing and enacting solutions (Bass,
1990). Intellectual stimulation promotes more creative problem solving, especially when
dealing with issues that are more complex (To, Herman, & Ashkanasy, 2015).

Transformational leaders will stimulate followers by including them in
discussions (Bass, 1990). The followers are part of the decision-making process and feel
genuinely recognized for their contributions (Bass, 1990). Through this inclusion, transformational leaders reach more followers thorough understanding issues and learn ways to resolve issues (Bass, 1990).

Leaders stimulate their followers’ effort to be innovative and creative by questioning assumptions, reframing problems, and approaching old situations in new ways (Bass, 1990). Leaders seek new ideas and creative solutions to problems from followers include addressing problems and finding solutions (Gordon, Gilley, Avery, & Barber, 2014).

*Individualized consideration.* Leaders demonstrate individualized consideration when attended to the needs of several followers rather than treat all followers equally (Bass, 1990). Transformational leaders recognize the unique developmental needs of individual followers and help them to satisfy their needs (Bass, 1990). Individualized consideration leaders help their followers to develop both professionally and personally by providing them with opportunities for such growth (Bass, 1990). Transformational leaders want to help their followers to develop to their fullest potential (Den Hartog, 2015).

Individualized consideration also means the leaders have a genuine interest in the welfare of their followers and will make leadership decisions with such considerations in mind (Bass, 1990). Individualized consideration occurs when leaders coach followers or recognize and express appreciation for individual followers’ efforts (Pharion, 2014). Leaders pay attention to each follower’s need for achievement and growth by acting as a coach or mentor (Pharion, 2014). They develop followers to successively higher levels of
potential (McCleskey, 2014). New learning opportunities created with an encouraging climate allow individuals grow within the organization (McCleskey, 2014).

**Transactional leadership.** The focus of the transactional leadership characteristic is preserving the normal flow (Ingram, 2015). Transactional leaders use disciplinary power and an array of incentives to motivate employees to perform at their best (Ingram, 2015). The term transactional refers to the leader motivating subordinates by exchanging rewards for performance; both the transformational and transactional leadership styles are necessary to guide an organization to success (Ingram, 2015). Transactional leaders provide distinct advantages through their abilities to address details quickly (Ingram, 2015). Transactional leaders handle all the details that come together to build a strong organizational reputation while keeping employees productive (Ingram, 2015).

Transactional and transformational leadership characteristics are important to the strategic development of both private and public businesses (Ingram, 2015). Transformational leaders aim for motivated goals, thus achieving rapid success through the vision and team-building skills of the leader (Ingram, 2015). In a transactional setting, organizational leaders strive to make everything a significant transaction (Seidman & McCauley, 2011). Organizational leaders convert them into a series of finite, specific steps consistently and easily measured, and the public is no different (Seidman & McCauley, 2011). Intense transactional pressures produce a narrowing of perspective and skills and transactional managers often become skilled at driving their people to meet the organizational goals (Seidman & McCauley, 2011).

Bass (1990) explained the four behavior factors displayed by transformational leaders are (a) idealized influence, (b) inspiration, (c) intellectual stimulation, and (d)
individualized consideration (Figure 1). These factors set transformational leaders apart from transactional leaders. The focus of transformational leadership characteristics, motivation, and collaboration with employees is at different levels of an organization (Bass, 1990). The primary transactional leadership characteristics are arguing the normal flow (Piccolo et al., 2012).

![Diagram](image)

*Figure 1.* Transformational and transactional leadership matrix identified in the Multifactor Leadership Questionnaire. Illustration developed by Bernard W. Becker, III, 2016.

In the U.S. fire service, transactional leadership characteristics are complimentary to transformational leadership characteristics (Geier, 2014). In a fire and emergency service setting, transactional leadership implies that followers receive some reward from the leader in return for successfully carrying out their duties and meeting the leader’s expectations, which represents a form of a transaction (Geier, 2014). The reward could be positive in a tangible (e.g., award, time off) or intangible (e.g., praise) form or could avoid something negative (Geier, 2014). Transactional leaders promote followers and motivate them to complete tasks (Geier, 2014). Fire and emergency service responders must be flexible enough to work in an uncertain environment, and leaders must create an
environment in which subordinates can contend with complex and unpredictable challenges (Derrane, 2013). The transactional reward leadership should also positively perform in that such leaders clarify expectations and recognize achievements that positively contribute to higher levels of effort and performance (Zhu, Sosik, Riggio, & Yang, 2012).

Transformational leadership characteristics include team building, motivation, and collaboration with employees at different levels of an organization to carry out change for the better (Bass, 1990). The focus of transactional leadership characteristics is upholding the proper flow of operations (Bass, 1990). The basis of transactional leadership is an exchange system where followers agree and accept a leader’s influence in return for resources, recognition, and rewards (Rehman, 2012). Transactional leaders build the foundation for leader–follower relations, and the transactional leadership theory followers’ commitment, satisfaction, and performance (Rehman, 2012).

**Passive avoidant leadership.** The passive-avoidant style of leadership encompasses management by exception and laissez-faire leadership (Avolio & Bass, 2004). First is management by exception (passive), which sets standards and corrective action only after a mistake or deviation from standards (Avolio & Bass, 2004). Second is laissez-faire leadership, which includes the absence of leadership, avoidance of responsibility, and the lack of decisions as a leader; the inactive leadership style (Avolio & Bass, 2004). Management by exception occurs when a leader waits for errors to happen before intervening (Sosik & Jung, 2010). As a result, followers to not regard the leader as a positive role model and thus show little trust in the leader (Sosik & Jung,
Management by exception behaviors tend to be ineffective in conditions and situations (Avolio, 2011).

Laissez faire is the avoidance or absence of leadership (Avolio & Bass, 2004). This leadership style occurs when leaders relinquish responsibility, do not follow up on issues, and avoid making decisions (Sosik & Jung, 2010). Individuals who exhibit this type of behavior mimic social sloths and are satisfied to sit and wait for others to take the initiative (Avolio, 2011).

Outcomes of leadership. The MLQ identified scores for three outcomes of leadership including extra effort, effectiveness, and satisfaction (Avolio & Bass, 2004). Extra effort refers to motivation, how the leader encourages others to try harder and do more than the expectation (Avolio & Bass, 2004). Effectiveness refers to meeting others’ job related needs and interacting at different levels of the organization (Avolio & Bass, 2004). Satisfaction refers to how satisfied raters are with their leader’s methods of working with others (Avolio & Bass, 2004). The employment of the three MLQ leadership outcomes scores enabled the researcher to determine the senior-level fire service effectiveness (Bass, 1990). Several researchers have used the outcomes of leadership within the MLQ to measure leadership effectiveness (Avolio & Bass, 2004). A fundamental characteristic of the model is that every leader displays each leadership style to some degree (Avolio & Bass, 2004). An optimal leadership profile should contain infrequent use of passive-avoidant leadership, slightly more frequent use of transactional leadership and frequent use of the various components of transformational leadership (Avolio & Bass, 2004).
**Education.** Members of the fire service who were fulfilling research requirements for their executive fire officer credentials have explored higher education (Geis, 2012). Throughout the history of the United States fire service, firefighters’ training and education often occurred within a fire department setting (Maxfield & Fisher, 2014). As a discipline, the United States fire service is training oriented and covers essential work-related skills, techniques, and knowledge (Clark, 2015). Higher education plays a role in developing responsible emergency service leaders from individuals willing to offer positive change to their respective communities (Buschlen, Warner, & Goffnett, 2015).

**History of higher education in the fire service.** From the 1900s to the 1950s, higher educational programs emerged limited in the United States fire service (Clark, 2015). United States fire service in higher education originated with fire protection engineering degrees in 1903 at the Armour Institute of Technology, Illinois, focus on large fires within the United States (Smeby, 2013). In 1937, educators at the University of California introduced a public administration program with a concentration in fire administration (Smeby, 2013).

From the 1960s to the 1980s, the United States fire service underwent a marked increase in higher levels of educational opportunities (Maxfield & Fisher, 2014). Favreau (1971) conducted three breakthrough surveys regarding higher education degree programs in the United States over 5 years (Mangeri, 2013). The first study took place in 1966 (Mangeri, 2013). Favreau (1971) noted the purpose of fire science technology was to discover the scope of fire educational studies and to provide career advancement pathways (Mangeri, 2013). Favreau (1971) noted that 21 universities had higher education programs in fire service (Mangeri, 2013). The second study took place in 1968,
and identified higher education programs in fire service in 59 universities in 17 states (Favreau, 1971). Favreau’s (1971) final study, conducted in 1971, involved a survey and included historical developments of United States fire service education that pointed to 138 universities throughout the United States had higher education in fire service (Mangeri, 2013).

The Wingspread conferences of 1966 and 1977 included issues in higher education in the U.S. fire service (Clark, 2015). The 1966 Wingspread final conference report said that professional status begins with education (Clark, 2015). The 1977 Wingspread conference report included an educational model where junior officers should get an associate’s degree and senior officers should reach a bachelor degree or higher (Clark, 2015). This model expanded to include both private and public disciplines at each level as fire protection engineers and fire administration (Clark, 2015).

In 1971, Congress funded the National Commission on Fire Prevention and Control for a study of the fire problem in the United States (National Commission on Fire Prevention and Control, 1973). The authors of the 1973 report, titled America Burning, described the current fire problem, and identified several recommendations. One of the recommendations underlined the need for better training and education in the fire service (Clark, 2015). Training for firefighters and officers ranged from excellent in some large cities to almost nonexistent in rural communities (Clark, 2015). Better training would improve fire departments’ effectiveness and reduce firefighter injuries, and better education is fundamental to developing leadership for fire prevention (National Commission on Fire Prevention and Control, 1973).
This research raised various issues to national attention, including the need for higher education in the United States fire service (Clark, 2015). The USFA and the Federal Emergency Management Agency’s fire prevention and control developed from the National Commission on Fire Prevention and Control’s 1973 report (Clark, 2015). The commission recommended creating a federal fire agency to support state and local governments in their efforts to reduce fire deaths, injuries, and property loss (National Commission on Fire Prevention and Control, 1973). The commission members recommended that this new agency be part of the United States Department of Housing and Urban Development (National Commission on Fire Prevention and Control, 1973). Congress established the National Fire Prevention and Control Administration with the passage of the Federal Fire Prevention and Control Act of 1974 (National Commission on Fire Prevention and Control, 1973). In 1978, Congress changed the name of the National Fire Prevention and Control Administration to the USFA (Clark, 2015). President Carter’s Reorganization Plan forwarded this newly created Federal Emergency Management Agency in 1979 (Clark, 2015). In 1979, the National Fire Academy opened in Emmitsburg, Maryland, providing training for fire service personnel and other persons engaged in fire prevention and control (Kruger, 2014).

**Training and education.** Training and education in the United States fire service, which typically involves continuing technical skills development, is in contrast to education, which typically involves acquiring knowledge (Ward, 2015). Training and education programs include a vision for the program process of study and label the ground rules of study for the fire department (Ward, 2015). Fire departments have an appointed training division (Clark, 2015). Numerous educators within the training
division do not possess higher levels of education (Clark, 2015). Education level is technical knowledge, with related skills, and abilities, then translate attributes to the members of their fire departments (Clark, 2015).

National Fire Academy personnel endorse increased educational requirements for each position in the organizational hierarchy (Figure 2). This model supports that firefighters and fire administrators with a college degree reduce the human and economic impact of fires in their communities (Geis, 2012). Developed in 2004, the national professional development models also supports that firefighters should gain higher levels of education and collectively reduce human and economic impact in their communities (USFA, 2010).

![National Professional Development Model](image)

*Figure 2. National Professional Development Model. From the United States Department of Homeland Security, the United States Fire Administration; National Fire Academy’s Executive Fire Officer Program (2010). Found in Appendix E and reprinted with permission.*

The Executive Fire Officer Program is an initiative of the National Fire Academy, under the USFA, designed to provide senior-level United States fire service personnel
with broad perspectives and various facets of fire and emergency services administration (USFA, 2010). In the Executive Fire Officer Program curriculum and research, participants examine how senior authority figures exercise leadership when dealing with difficult, adaptive problems within their jurisdictions (USFA, 2010). Executive Fire Officer Program participants heighten their professional development through a unique series of four resident, graduate-level, and upper-level college-equivalent courses and completes an applied research project for each course (USFA, 2010). The Executive Fire Officer Program spans a 4-year period and consists of four core courses. Each course is 2 weeks in length (USFA, 2010). Participants receive a certificate of completion for the entire Executive Fire Officer Program only after successfully closing the final applied research project (USFA, 2010).

Professional development. For the last decade, fire and emergency services have gradually evolved in a profession (Maxfield & Fisher, 2014). The community support for professional services expenses, which are what the community is willing to support through taxes (Maxfield & Fisher, 2012). The U.S. fire service professional needs to have similar education levels to engage in decision-making processes (Maxfield & Fisher, 2012). This is comparable to the city manager, attorney, finance director, and human resources directors (Maxfield & Fisher, 2014). The United States fire service is in a critical period as leaders try to strengthen its professional image and to provide services in an efficient and effective manner (Austin, 2010). The United States fire service is a profession similar to other professions such as medicine and law (Cox, 2012). Both Sobotka (2013) and Cox (2012) noted that implementing the Center for Public Safety Excellence Chief Fire Officers’ Designation Program requires senior-level fire service
personnel to put their accomplishments on the line through a peer-review. The process will decide if their education, training, experience, and competencies are suitable for a chief fire officer (Sobotka, 2013).

The United States fire service training and education must meet four fundamental grounds (Uma, 2013). First, new candidates who join an organization receive early training (Uma, 2013). Through this training, individuals become familiar with the organizational mission, vision, rules and regulations, and working conditions (Uma, 2013). Second, the existing employees receive continual training to refresh and increase their knowledge (Uma, 2013). Third, if any technology updates and amendments take place, candidates receive advanced training to keep abreast with the changes, which include buying new equipment and changes in the technique of production (Uma, 2013). Fourth, when promotion and career growth become available, candidates receive an offer for training and higher education and are ready to share the responsibilities of the higher-level job (Uma, 2013).

Higher education in the United States fire service began during its early development and maturation (Carter, 2015). Fire service leaders still need to understand why individuals in the United States fire service profession aim for and achieve higher education (Morgan, 2011). To understand the United States fire service profession, those leaders need to understand what factors influence developing the profession in achieving leadership characteristics and higher education (Morgan, 2011). Fire chiefs who lack education and leadership characteristics cannot meet the expectations of city managers or citizens in the community (Blalock & Hawaii, 2013). The college classroom is a suitable location to develop administrative competencies (Clark, 2015). A college education has
become an expected part of a candidate’s resume for a leadership position within a fire department (Clark, 2015). Critical thinking is an important aspect of higher education (Carter, 2015). Problem-solving and important thinking lie at the heart of every aspect of life (Carter, 2015).

As previously noted, the United States fire service is no longer an isolated profession in which members nurture its unique culture without outside influences (Carter, 2015). This began decades ago with advancements in emergency medical services (Connolly, 2012). The United States fire service no longer remains separate from instilling best practices in emergency medicine, dangerous materials, or terrorist threats (Connolly, 2012). Disciplines once considered safe havens, such as higher education, now face exposure to competitive forces (Clark, 2015). Education is an experiential service where the active involvement of both the service provider (higher education) and the consumer (student) is necessary (Khanna et al., 2014). Leaders are only as powerful as the ideas conveyed and communicated (Jolley, 2008).

Increasing higher education for firefighters is a strategy to respond to new demands and challenges as requirements for working in the U.S. fire service become more complex (Geis, 2012). Leaders in the United States fire service want to strengthen its professional image by seeking higher education to support its work (Wæraas & Byrkjeflot, 2012). Leaders are increasingly recommending that those entering the United States fire service profession have postsecondary education (Clark, 2015). Individuals seeking higher education either for enrichment or because of the growing number of departments needing advanced degrees for promotion (Wæraas & Byrkjeflot, 2012).
As the United States fire service transitions from a trade to a profession, academic degrees are becoming more common among members of the profession (Mangeri, 2013). Degrees are often a need to advance from firefighter to specialist, officer, and eventually chief fire officer (Mangeri, 2013). Potential employers know a degree reflects a personal commitment to one’s career and a want to learn and change in a changing environment (Mangeri, 2013). Individuals who have completed higher levels of education will gain increased levels of responsibility (Mangeri, 2013).

**Methodology.** This study included the quantitative research method. The quantitative methodology is reliable and objective, includes relationships between variables, and incorporates cause and effect in controlled circumstances (Leedy & Ormrod, 2012). Quantitative research often includes cost-effective surveys to discover specific influences within an organization (Grohmann & Kauffeld, 2013). Quantitative surveys are easy to manage and analyze when employing numerous participants (Grohmann & Kauffeld, 2013).

This study included a quantitative methodology. The quantitative methodology proved to be more reliable and objective, looks at relationships between variables, and can prove cause and effect in controlled circumstances (Leedy & Ormrod, 2012). A quantitative, survey-based research approach is the fitting because of the ease of administration to a vast number of participants, as well as the ease of calculating the information (Grohmann & Kauffeld, 2013). Quantitative studies with self-administered surveys are easier to manage and are suitable for collecting data intended for statistical analysis (Vespie, 2010). This study was nonexperimental, as there was no control group.
(Trochim, 2006) and included the descriptive statistics statistical design of the population (McNabb, 2008).

The foundational leadership characteristics of transactional, transformational, and passive-avoidant leadership form a framework for gaining a deeper understanding of the effects that leadership characteristics can create (Bass, 2013). The data studied originated from an MLQ 5X short form survey delivered by email using SurveyMonkey to the target audience of 1,000 NFA/EFO Program senior-level students employed throughout the United States (Avolio & Bass, 2014). This study included 1,000 senior-level students, with an expectation of receiving at least 278 completed surveys to earn the sample size needed as determined using G*Power. The surveys were necessary to achieve a 95% confidence level with a margin of error of 5%.

Wilderman (2013), Fox (2009), Derrane (2013), and Cox (2012) all researched various levels of fire and emergency service leadership characteristics and educational or training levels and used the MLQ 5X short form (Avolio & Bass, 2014). Previous researchers indicated the best reason to use the MLQ 5X short form was the instrument would identify leadership characteristics in a manner that resonates with other particular theories (Avolio & Bass, 2014). In particular, researchers used the MLQ 5X short form to look at classic and modern leadership perspectives and theories, as well as their application (Avolio & Bass, 2014). Other leadership instruments, including Blake and Mouton’s 1964 Managerial Leadership Self-Assessment Questionnaire or the Revised Self-Leadership Questionnaire developed by Houghton and Neck in 2002, do not reach the center of focus and do not have decades of use, trending, or validity.
**Full range leadership model.** Bass and Avolio (1995) developed the full range of leadership model to include a variety of leadership styles of differing effectiveness. The model has three primary categories of leadership in a hierarchy ordered by the effective to the least effective, transformational, transactional, and laissez-faire (Antonakis et al., 2003). The instrument designed by Bass and Avolio (1995) specifically for leadership style research identifies as the MLQ. The MLQ measures the presence of twelve factors of leadership (Bass, 1990). Nine of the factors relate directly to the three general styles of leadership (Bass, 1990).

Researchers used the MLQ 5X short form to measure a broad range of leadership behaviors while revealing factors that discover what makes up an effective or ineffective leader (Bass, 2013). The focal point of the survey instrument is to create a reflection of individuals’ leadership behavior (Bass, 2013). Because researchers used the MLQ 5X short form to measure a wider range of leadership behaviors, the instrument is suitable for administrative positions at all levels in varying organizations across a variety of sectors (Bass, 2013).

Bass (2013) designed the MLQ 5X short form so researchers could measure the transformational, transactional, and laissez-faire leadership styles (Bass, 2013). The MLQ 5X short form has two forms to assess leadership behaviors (Bass, 2013). One form is a self-assessment for leaders to complete about their leadership behaviors (Bass, 2013). The second form is a rater form for supervisor’s subordinates to respond (Bass, 2013). This study included only the rater form to measure leadership characteristics of senior-level United States fire service personnel. The MLQ 5X short form is suitable for survey and research for this study (Bass, 1990). The current version of the MLQ 5X short form
includes a nine-factor leadership model (Bass, 2013). According to Bass (2013), the nine measureable factors are idealized influence—attributed, idealized influence—behavioral, inspirational motivation, intellectual stimulation, individualized consideration, contingent reward, active management-by-exception, passive management-by-exception, and laissez-faire (Bass, 2013).

Appropriateness of instruments/data collection. The MLQ 5X short form is a leadership survey instrument researchers use to evaluate three different leadership styles: transformational, transactional, and passive-avoidant (Avolio & Bass, 2014). Individuals can measure and visualize themselves on specific leadership behaviors using the leader/self-form. The foundation of the MLQ 5X short form is the evaluation questions and form; (Avolio and Bass (2014) designed the MLQ 5X short form with the 360-degree method. The MLQ 5X short form is the commonly used tool to measure transactional and transformational leadership (Avolio & Bass, 2014). This survey tool has changed over a 30-year period based through various studies in both the public and the private sector (Bass, 2013). The MLQ 5X short form includes 45 items designed to measure leadership behaviors shown in previous research to relate strongly to individual and organizational effectiveness and success (Avolio & Bass, 2014). One section includes 36 items to measure leadership behaviors and independent variables. The dependent variable (organizational culture), was also captured using the MLQ 5X short form (Avolio & Bass, 2014). The MLQ 5X short form includes a 5-point Likert-Type scale that suggests how often the behaviors manifest: 0 = not at all; 1 = once in a while; 2 = sometimes; 3 = fairly often; and 4 = frequently, if not always (Avolio & Bass, 2014).
Researchers used the MLQ 5X short form in countless studies to assess the effectiveness in a variety of settings in over 30 countries (Avolio & Bass, 2014). Researchers examined leadership styles of educational institutions, military organizations, corporations, government agencies, using the MLQ 5X short form (Alsayed, Motaghi, & Osman, 2012; Boies, Lvina, & Martens, 2010; Hunt & Fitzgerald, 2013; Leithwood & Sun, 2012; Leong & Fischer, 2011; Piccolo et al., 2012; Scherer, 2014; Vinkenburg, van Engen, Eagly, & Johannesen-Schmidt, 2011; Westerlaken & Woods, 2013). The MLQ 5X short form was suitable for this study because researchers have tested and certified it through several years of research (Aarons & Sommerfeld, 2012; Boies et al., 2010; Braun, Peus, Weisweiler, & Frey, 2013; Effelsberg, Solga, & Gurt, 2014; Gockel & Werth, 2015; Mathieu, Neumann, Babiak, & Hare, 2015; Peus, Braun, & Frey, 2013). Researchers have used the MLQ 5X short form in both the public and the private sector, and this study served as an opportunity to use the survey tool in the U.S. fire service as an expansion of the research by Wright, Moynihan, and Pandey (2012).

This study’s results add value, contribute to the body of knowledge regarding transformational leadership, and provide valuable information that is adaptable in the United States fire service (Ditch, 2012). The MLQ 5X short form is the product of extensive psychometric and theoretical work and is the popular measure of transformational and transactional leadership (Wang & Howell, 2012). Researchers have learned notable information about transformational and transactional leadership through the application of the MLQ 5X short form (Wang & Howell, 2012).
Summary

This literature review included leadership information in the United States fire service, transformational and transactional leadership characteristics. It also included the four I’s of transformational leadership, the history of higher education in the fire service, training and education, professional development, methodologies, and a summary. The background of the United States fire service has a long history of identifying critical leadership and educational level needs for senior-level personnel. The literature review included this study’s significance, as the researcher provided context, identified gaps in the literature, and provided a comprehensive review of information fitting to the study.

This study included an investigation into gaps related to leadership characteristics and educational levels prevalent among senior-level fire service personnel in the United States. Leadership characteristics and educational levels are two factors that may shape the degree to which individuals accurately perceive and assess risk, which is a foundational requirement of senior-level fire service personnel (Bruegman, 2011). This study included the full range of leadership model and theory. In the full range leadership model, Bass (1990) proposed that transformational leadership is the effective leadership characteristic in circumstances. Knowing whether transformational leadership is the effective leadership characteristic for senior-level United States fire service personnel may help to identify and promote the efficient leadership characteristic for this public discipline. The value of this study is its clear explanation of the leadership characteristics and requirements for higher levels of education for senior-level United States fire service personnel. Without quality features, members of U.S. fire service organizations will focus
in less significant items, suffer the loss of morale and pride, and lose the public’s trust (Geis, 2012).

Chapter 3 includes a description of the research methodology and the research design, as well as an explanation of the population and sample selection. Chapter 3 also includes a description of the data collection and data analysis procedures for this study. Finally, Chapter 3 contains a description of the ethical considerations and the limits of the study. The study findings are in Chapter 4. Chapter 5 includes interpretations of the findings and recommendations for action and future research.
Chapter 3: Methodology

Introduction

The purpose of this quantitative descriptive study was to identify the leadership characteristics and educational levels prevalent among senior-level fire service personnel in the United States. Two independent variables, leadership characteristic and educational levels, using the MLQ 5X short form was examined (Avolio & Bass, 2014). The dependent variable is the organizational culture. This study contributed to the field of knowledge through an examination of how the independent variables met the needs of senior-level fire service personnel, originating from the MLQ 5X short form (Avolio & Bass, 2014). To reach a suitable sample size based on a G*Power analysis, the study population was sent via email to 1,000 NFA/EFO senior-level students employed throughout the United States. At least 278 surveys were necessary to earn a 95% confidence level with a margin of error of 5%. This study obtained 465 completed surveys, demonstrating a 3.3% margin of error.

Educational and leadership researchers have not addressed the role of United States fire service leaders in managing information and knowledge, despite their importance to the organization (Kahn, 2015). United States fire service personnel continue to respond to challenges that will need changes in the task, and mission of the U.S. fire service (Kahn, 2015). The absence of leadership negatively influences the health of an organization (Quinn, 1996). Without skilled leaders, the organization changes into one that is stagnant and firm (Quinn, 1996).

The United States fire service has a long history of identifying critical leadership and educational level requirements customary for senior-level fire service personnel
United States fire service leaders recognize the fire service can no longer be an isolated profession without outside influences (Carter, 2015). The United States fire service could no longer be separate from instilling best practices in emergency medicine, hazardous materials, or terroristic threats (Connolly, 2012). Education is an experiential service in which the active involvement of both the service provider (higher education) and the consumer (student) is necessary (Khanna et al., 2014).

Chapter 3 includes a detailed discussion of the methodology used for the study. Specifically, the chapter includes the statement of the problem, research questions and hypotheses, and research methodology. Chapter 3 also includes the research design, population and sample selection, instrumentation, validity, reliability, data collection procedures, data analysis procedures, ethical considerations, and limitations.

**Statement of the Problem**

The problem was a lack of knowledge concerning which leadership characteristics and educational levels are prevalent among senior-level fire service personnel in the United States (Wilderman, 2013). This study examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the United States fire service organizational culture. Transformational leadership is the effective leadership style for emergency managers (Wilderman, 2013). The study of leadership characteristics is becoming an increasingly important issue for organizations (Kahn, 2015).

Ineffective leadership characteristics and educational levels may result in the loss of life and property from disastrous events (Daugherty, 2012). The aftermath of September 11, 2001, underscored the importance of United States fire service
professional development standards (Busch & Givens, 2012). With a renewed readiness and response emphasis, the need for improved leadership in the fire and emergency services (Busch & Givens, 2012). When the environment changes and the changes affect the public fire and emergency services, the fire and emergency services must launch organizational change (Yang et al., 2011). Educational theory is a body of connecting principles, counsels, and recommendations aimed at influencing teaching, educating, and learning, as needed in U.S. fire service leadership (Moore, 2011).

**Research Questions and Hypotheses**

The research questions and hypotheses for this quantitative study were as follows:

**R1:** Does a significant correlation exist between leadership characteristics of senior-level personnel and the United States fire service organizational culture?

**H1₀:** There is no significant correlation between leadership characteristics of senior-level personnel and the United States fire service organizational culture.

**H₁ₐ:** There is a significant correlation between leadership characteristics of senior-level personnel and the United States fire service organizational culture.

**R2:** Does a significant correlation exist between the level of education of senior-level personnel and the United States fire service organizational culture?
H2₀: There is no significant correlation between the level of education of senior-level personnel and the United States fire service organizational culture.

H₂ᵃ: There is a significant correlation between the level of education of senior-level personnel and the United States fire service organizational culture.

Answering the research questions included an examination of whether transformational leadership is the prevalent leadership characteristic among senior-level fire service personnel in the United States. This study included a quantitative methodology. Quantitative methodology is more reliable and objective, looks at relationships between variables, and can show cause in controlled circumstances (Leedy & Ormrod, 2012). Quantitative research often includes cost-effective surveys to discover specific organizational influences (Grohmann & Kauffeld, 2013). Quantitative surveys are easy to manage participants and analyze (Grohmann & Kauffeld, 2013). Quantitative research mainly involves cost-effective surveys to decide specific organizational influences (Grohmann & Kauffeld, 2013). Quantitative survey-based research approach is fitting because of the ease of managing a survey to participants and the ease of calculating the data gathered (Grohmann & Kauffeld, 2013).

This study’s data collection involved using the MLQ 5X short form delivered by email using SurveyMonkey to 1,000 NFA/EFO senior-level students (Avolio & Bass, 2014). The purpose was to identify the transformational factors based from the MLQ 5X short form survey and translate the results (Bass, 1990). The MLQ 5X short form is the tool researcher’s use often to measure transactional and transformational leadership (Avolio & Bass, 2014). The survey tool has changed over a 30-year period based from
various studies in both the public and the private sectors. The fundamental leadership characteristics of transactional, transformational, and passive-avoidant leadership comprise a framework for gaining a deeper understanding of the effects that leadership characteristics can create (Avolio & Bass, 2014).

Research Methodology

This study included a quantitative methodology. The quantitative methodology is more reliable and objective, looks at relationships between variables, and can prove cause and effect in controlled circumstances (Leedy & Ormrod, 2012). Quantitative researchers mainly use cost-effective surveys to find out specific organizational influences (Grohmann & Kauffeld, 2013). A quantitative, survey-based research approach is fitting because of the ease of administration to a vast number of participants, as well as the ease of calculating the information (Grohmann & Kauffeld, 2013). Quantitative studies with self-administered surveys are easier to manage and are suitable for collecting data intended for statistical analysis (Vespie, 2010). This study was nonexperimental, as there was no control group (Trochim, 2006) and included the descriptive statistics statistical design of the population (McNabb, 2008).

Researchers conduct quantitative research to quantify problems by producing numerical data and translating them into usable statistics (Wyse, 2011). Quantitative research is useful for quantifying attitudes, opinions, behaviors, and other defined variables and for generalizing results from a large sample (Wyse, 2011). Quantitative researchers use measurable data to express facts and uncover patterns in research (Wyse, 2011). Quantitative data collection methods have more structure than qualitative data collection methods (Wyse, 2011). Quantitative data collection methods include various
forms of online surveys, paper surveys, mobile surveys and kiosk surveys, face-to-face interviews, telephone interviews, longitudinal studies, website interceptors, online polls, and systematic observations (Wyse, 2011). Qualitative research is mostly exploratory, and researchers use it to gain an understanding of underlying factors, opinions, and motivations (Cooper & Schindler, 2011). Researchers conduct qualitative research to provide insights into the problem or to develop ideas or hypotheses for potential quantitative research (Cooper & Schindler, 2011; Wyse, 2011).

**Research Design**

This study included a descriptive research design. A descriptive approach to this study was suitable because of a validated and reliable questionnaire used in similar studies. The descriptive approach allowed for the collection and statistical analysis of large data sets. Descriptive research involves gathering information about prevailing conditions or for description (Salaria, 2012). This research design does not involve simply amassing and tabulating facts; it includes properly analyzing, interpreting, comparing, and identifying trends (Salaria, 2012). A descriptive research approach is right for testing specific hypotheses; defining ideas as distinct variables; using standard procedures; and conducting analysis with statistics, tables, and figures as occurred in this study (Harvard University, 2014).

This study included a descriptive statistical approach. The descriptive aspect of the approach was suitable for discovering previously unknown conditions by exploring and describing possible correlations (Sahar-Khiz, 2010). The previously unknown conditions were whether senior-level fire personnel displayed the transformational leadership characteristic, whether transformational leadership was the prevalent
leadership characteristic, and whether six independent variables correlated with the three leadership characteristics examined. Because leadership characteristics information of senior-level fire personnel is lacking, the descriptive approach was appropriate for collecting information related to current conditions and practices.

The data came from 465 responses to the MLQ 5X short form delivered to 1,000 NFA/EFO senior-level students employed throughout the United States (Avolio & Bass, 2014). The International Association of Fire Chiefs Executive Fire Officer Section program coordinator delivered the questionnaire by emails using SurveyMonkey. The MLQ 5X short form served to collect the quantitative data necessary to decide whether transformational leadership is the prevalent leadership characteristic for senior-level fire service personnel. The MLQ 5X short form was also the means of collecting data for the six independent variables used for the correlations analyses (Avolio & Bass, 2014). Because all the data were in a numeric format, the quantitative design was fitting. The MLQ 5X short form is popular in leadership research and was suitable for the study because of its acceptance by leading leadership researchers (Avolio & Bass, 2014).

**Population and Sample Selection**

In 2015, the U.S. fire service consisted of 1.1 million firefighters and 32,000 fire departments (Clark, 2015). Volunteer personnel work 80% of fire departments, with the remaining 20% worked by career personnel (Clark, 2015). Introduced in 1983, the first NFA/EFO Program students graduated in July 1997 (USFA, 2010). Every year, the NFA/EFO Program has 300 applications and accepts 225 for the 4-year program. In 2010, the NFA/EFO Program had 3,571 graduates since its beginning (USFA, 2010).
There is an average of 1,000 students in the program at any one time; thus, this study included the current 1,000 students (USFA, 2010).

To reach a suitable sample size based on a G*Power analysis, the study population was sent via email to 1,000 NFA/EFO senior-level students employed throughout the United States. At least 278 surveys were necessary to earn a 95% confidence level with a margin of error of 5%. This study obtained 465 completed surveys, demonstrating a 3.3% margin of error. The data collection first included receiving permission to conduct the study by the International Association of Fire Chiefs Executive Fire Officer Section. Selected participants received an email containing the request for participation and an informed consent statement. After the participants signed the consent form electronically, the participants received further instructions how to take the survey. Participation was voluntary and could choose not to take part, or, if participated, could withdraw from the study without penalty. Their decision of whether to take part did not affect their status as a NFA/EFO student. The benefits of taking part were useful career insights for themselves and others in their organization.

Instrumentation

The MLQ 5X short form, designed by Avolio and Bass (2014), was the quantitative data collection instrument selected for the study. The MLQ 5X short form is a self-administered survey that takes nearly 15 minutes to complete (Avolio & Bass, 2014). Researchers use the MLQ 5X short form to discover the extent to which an individual presents each of three leadership characteristics: transformational, transactional, or passive-avoidant (Avolio & Bass, 2014). Researchers also use the MLQ 5X short form to measure the presence of 12 factors of leadership related to leadership
characteristics (Avolio & Bass, 2014). The five factors of transformational leadership include idealized influence (attributed), idealized influence (behavior), inspirational motivation, intellectual stimulation, and individualized consideration. The two factors of transactional leadership are contingent reward and management by exception (active). The two factors of passive avoidant leadership are management by exception (passive) and laissez-faire (Avolio & Bass, 2014).

Besides the nine factors used for measuring leadership characteristics, the study also involved comparing the correlation between the level of education of senior-level personnel and the organizational culture found in the United States fire service. The three leadership outcomes are extra effort, effectiveness, and satisfaction. Researchers use outcomes to measure the results of leadership independent of leadership characteristics (Avolio & Bass, 2014).

The MLQ 5X short form has 45 questions, 36 of which signal the presence and extent of nine specific leadership factors (Avolio & Bass, 2014). The leadership behavior factors had a connection to one of the three leadership characteristics (Avolio & Bass, 2014). The remaining nine factors included the presence and extent of the three leadership outcomes. Of the 45 MLQ 5X short form questions, twenty showed the presence and extent of transformational leadership, eight showed the presence and extent of transactional leadership, and eight pointed out the presence and extent of passive-avoidant leadership. The remaining nine questions incorporated the three outcomes of leadership (Avolio & Bass, 2014).

Three of the nine leadership outcome questions served to discover extra effort, four served to discover effectiveness, and two served to discover satisfaction. Participants
answered each of the 45 questions using a 5-point Likert-Type scale ranging from 0 (*not at all*) to 4 (*frequently, if not always*) (Avolio & Bass, 2014). An example of the MLQ 5X short form questionnaire and the MLQ 5X short form scoring sheet is located in Appendix A.

Den Hartog, Van Muijen, and Koopman (1997) and Lowe, Kroeck, and Sivasubramaniam (1996) studied the MLQ validity and found it to be both valid and reliable for measuring transformational leadership factors. The MLQ 5X Short had an alpha coefficient of .95 for discovering transformational leadership (Den Hartog et al., 1997). Lowe et al. (1996) used a meta-analytical approach to proving the validity and reliability of the MLQ 5X short form as an instrument to measure leadership characteristics and effectiveness. Cole, Bedeian, and Field (2006) determined that managing the MLQ 5X short form through a web-based method rather than through a paper-and-pencil method did not significantly affect the legality of the results. The researcher considered the potential for bias in using the MLQ 5X short form and identified known examples of bias. The researcher considered the examples of bias and found none of the examples reviewed were relevant in this study (Lievens, Van Geit, & Coetsier, 1997).

MLQ 5X short form scores reflect the mean of a particular factor, gained by adding the scores of each factor’s response and dividing by the number of questions used to measure the factor (Avolio & Bass, 2014). The results of the calculations of the 12 factors were percentile values representing the extent of each of the 12 factors (Avolio & Bass, 2014). The resulting extent values for the leadership factors were suitable for discovering whether senior-level fire service personnel displayed stronger
transformational leadership characteristics factors than transactional or passive avoidant characteristics (Avolio & Bass, 2014). The resulting magnitude values of the outcome leadership factors were suitable for discovering the effectiveness of the presented leadership characteristics (Avolio & Bass, 2014).

The Mind Garden website encompasses the MLQ 5X short form (Mind Garden, 2014). Study participants received a URL link connecting them to the SurveyMonkey website testing page to complete the questionnaire. Participants did not need to provide identification information, such as their names and the name of their organizations, but did need to provide values for the questions correlating to the six independent variables. The participants completed the entire MLQ 5X short form, including the added data collection of the six independent variables and their educational status as a senior-level U.S. fire service leader. After participants completed the data collection, the researcher downloaded the raw data from the SurveyMonkey website and analyzed the data.

Validity

The MLQ 5X short form was the instrument used to measure the results of this study, and researchers have already supported it and used it in previous research (Avolio & Bass, 2014). The full range leadership theory, using the MLQ 5X short form, presents consistent research analysis and explains the transformational leadership characteristic that best correlates with noted organizational effectiveness outcomes (Avolio & Bass, 2014). Transactional leadership characteristics and then passive-avoidant leadership characteristics follow, which correlate negatively with noted organizational effectiveness outcomes (Avolio & Bass, 2014). While the full range of leadership theory preserve general consistency across diverse populations and organizations, external validity must
also account for the participant’s confounding variables (Phillips, Sobol, & Varano, 2010). The NFA/EFO Program students completed the MLQ 5X short form; however, the results may not be representative of all senior-level fire service personnel in the United States.

Validity entails a study’s accuracy, and credibility (Leedy & Ormrod, 2012). Kozlowski, Chao, Grand, Braun, and Kuljanin (2013), identified internal (experimental procedures), external (untrue inferences), and statistical (inadequate statistical power) threats to validity. Limits to validity include the idea the determined values do not represent anything outside the context (Leedy and Ormrod, 2012). A research study is internally valid when researchers can draw accurate conclusions about relationships from the data and can justify the conclusions drawn from the collected data (Leedy & Ormrod, 2012). Internal validity concerns the capacity of the research design to test the study hypothesis the researcher designed it to test (Bordens & Abbott, 2008).

Threats to internal validity include selection bias and instrumentation issues (Neuman, 2006). To address Neuman’s (2006) threats to validity and lessen selection bias, the researcher purposefully selected students from the NFA/EFO program. For this study, the sample size and measurement tools confirmed the study’s internal validity.

External validity is the ability to generalize the study results outside the research setting (Neuman, 2006).

External validity involves concerns which a researcher can initialize a study’s results beyond the scope of the study, which becomes relevant when applying research to real-world scenarios (Bordens & Abbott, 2008). Threats to external validity include pretesting, participant biases, emotional effects of the experimental design, and multiple
treatment interferences (Bordens & Abbott, 2008). The researcher strengthened the external validity of this study by comparing the findings to studies with similar variables while contrasting the impacts of social and environmental conditions (Leedy & Ormrod, 2012). External validity and generalized information is distinctive for this study (Leedy & Ormrod, 2012). The MLQ aspects were central to this study in that United States senior-level fire service personnel were compared against the MLQ nationwide sample (3,375 participants) of managers and other leaders (Avolio & Bass, 2014).

Reliability

The reliability of a survey instrument is a critical item (Jogulu & Pansiri, 2011). Reliability refers to the consistency of the measurement and the degree to which the questions used in a survey elicit the same information for each administration under the same conditions (Jogulu & Pansiri, 2011). The MLQ 5X short form is valid and reliable (Avolio & Bass, 2014). In the MLQ 5X short form sampler, research findings suggest a reliability coefficient of 0.74 to 0.94 (Avolio & Bass, 2014).

Cronbach developed the Cronbach alpha statistic in 1951 to provide a measure of the internal consistency of a test or scale, as expressed as a number between 0 and 1 (Tavakol & Dennick, 2011). Internal consistency describes the extent all items are measure, using the same idea interrelatedness of the items within the test (Tavakol & Dennick, 2011). The Cronbach alpha statistic enabled examining the survey instrument’s internal reliability specifically for the constructs of leader behavior, for initiating structure leader behavior, and for employee engagement (Tavakol & Dennick, 2011). A .70 or greater Cronbach alpha score means an instrument is reliable (Falk & Savalei, 2011). Instruments that measure subjective characteristics have less reliability than those
that measure physical phenomena; the correlation coefficient provides a significant benchmark for discovering an instrument’s reliability (Leedy & Ormrod, 2012).

The MLQ 5X short form had a comparative fit index of .901 and a root mean square error of estimate of .036 (Antonakis, Avolio, & Sivasubramaniam, 2003). This finding suggests a good fit between the model and available data (Antonakis, Avolio, & Sivasubramaniam, 2003). Researchers have managed the MLQ 5X short form in hundreds of research settings over the past 25 years (Avolio & Bass, 2014). The MLQ 5X short form is a self-report measurement tool used to measure leadership subscales similar to transformational, transactional, and passive-avoidant leadership characteristics (Kanste, Miettunen, & Kyngäs, 2007).

In addressing data cleanliness, the researcher only accepted completed surveys; removed are partial or incomplete surveys. The participants answered the questions using the 5-point Likert-Type scale ranging from 0 (not at all) to 4 (frequently, if not always) (Avolio & Bass, 2014). Only the available selection choices were available to the participants, allowing only one answer per question. Normality is a concept of statistics that stems from the concept of the normal distribution (Leedy & Ormrod, 2012). The question of normality becomes less important when the sample is large due to the central limit theorem (Leedy & Ormrod, 2012). In larger samples, the $t$ test is robust to violations of this assumption (Leedy & Ormrod, 2012). Even for distributions, which depart markedly from normality, sums of 50 or more observations approximate to normality (Leedy & Ormrod, 2012).
Data Collection Procedures

The data collection began with a submission to the Institutional Review Board (IRB) at Columbia Southern University. The IRB reviewed the methodology for this study for appropriateness and adherence to ethical standards for human subject research. The IRB said the study was suitable and ethical for a doctoral study and provided approval for the study. The researcher reported there were no conflicts of interest in the study and noted there were no known risks to participants.

The data collection procedures included securing written permission from the International Association of Fire Chiefs Executive Fire Officer Section (IAFC/EFO) program coordinator. The IAFC/EFO coordinator then provided the researcher with the email addresses of the NFA/EFO students. The researcher provided 1,000 NFA/EFO students a link to the SurveyMonkey website research questionnaire. The researcher obtained permission to use the SurveyMonkey survey instrument (Appendix B). The recommended sample size consisted of 278 participants, with a confidence level of 95% and a margin of error of 5%, as determined by the power analysis conducted using G*Power 3.1 software. The SurveyMonkey questionnaire was available for 30 days for the NFA/EFO students to participate.

The researcher collected the participants’ responses using secured, encrypted secure sockets layer and transport layer security connections. Personnel at SurveyMonkey used secure sockets layer and transport layer security technology to protect communications using both server authentication and data encryption. This process ensures user data in transit were safe, secure, and available only to the intended recipients (SurveyMonkey, 2015). Information and data backups occurred hourly,
internally, and daily to a centralized backup system for storage in multiple geographically disparate sites (SurveyMonkey, 2015). SurveyMonkey securely stored the data. The researcher downloaded the raw data to the Statistical Package for the Social Sciences (SPSS) program and placed them in the MLQ 5X short form categories. The NFA/EFO Program students completed an electronic consent form before beginning the survey (Appendix C).

The respondents agreed to participate in the research through an electronic signature. If a participant agreed to take part, a note of appreciation appeared, and the participant began taking the 15-minute survey. The participants received detailed instructions for the survey, as well as ways to contact the researcher with any questions or comments. After answering all the questions, the participants pressed the enter button and received an appreciation note for their participation. Immediately after filing the survey, the data remained secured in the SurveyMonkey database for access by the researcher. At completion of the 30-day survey cycle, the researcher accessed SurveyMonkey and downloaded the raw data in the SPSS software for calculation and tabulation.

**Data Analysis Procedures**

This study involved collecting the necessary information to identify the two independent variables, leadership characteristics, and educational levels, captured by using the MLQ 5X short form (Avolio & Bass, 2014). The research questions and matching hypotheses were as follows.

R1: Does a significant correlation exist between leadership characteristics of senior-level personnel and the United States fire service organizational culture?
H10: There is no significant correlation between leadership characteristics of senior-level personnel and the United States fire service organizational culture.

H1a: There is a significant correlation between leadership characteristics of senior-level personnel and the United States fire service organizational culture.

R2: Does a significant correlation exist between the level of education of senior-level personnel and the United States fire service organizational culture?

H20: There is no significant correlation between the level of education of senior-level personnel and the United States fire service organizational culture.

H2a: There is a significant correlation between the level of education of senior-level personnel and the United States fire service organizational culture.

Two independent variables, leadership characteristic and educational levels, using the MLQ 5X short form was examined (Avolio & Bass, 2014). This study examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the United States fire service organizational culture. A timeline of 30 days was suitable to manage the survey instruments, collect the raw data, and analyze the data. An added timeline of 14 days was suitable to recover, interpret, and format the data. The raw data originated with permission from the International Association of Fire Chiefs Executive Fire Officer Section program coordinator. The program coordinator provided the researcher the student email list.
The researcher used SPSS to analyze descriptive statistics, which included frequency counts, means, percentages, and standard deviations, to group and analyze the demographic information and the employee views of leadership behavior, and engagement. The participants answered the questions using the 5-point Likert-Type scale ranging from 0 (not at all) to 4 (frequently, if not always) (Avolio & Bass, 2014). Appendix A contains an example of the MLQ 5X short form questionnaire and scoring sheet. Data analysis procedures included interpreting responses using the descriptive statistical design of the population. The raw data from the SurveyMonkey instrument were automatically in categories. Through this SurveyMonkey feature, the researcher transcribed the raw data easily into the SPSS program for analysis.

The primary reason for the data analysis process was to collect data uniformly and interpret the data using the Mind Garden format. This format was consistent with prior leadership research, thus preserving uniformity and consistency. The data analysis aligned with the research methodology and design by providing a systematic strategic framework to leadership studies previously identified. The data analysis technique aligned with the research design.

The data collection in an experiment must be reliable, so the same result occurs if the study undergoes reproduction. If observations are not repeatable, then descriptions and explanations are unreliable. To reach a suitable sample size based on a G*Power analysis, the study population was sent via email to 1,000 NFA/EFO senior-level students employed throughout the United States. At least 278 surveys were necessary to earn a 95% confidence level with a margin of error of 5%. This study obtained 465 completed surveys, demonstrating a 3.3% margin of error. Descriptive statistics (i.e., means and
standard deviations) were suitable for discovering if the researcher would accept or reject the null hypothesis for the two independent variables, leadership characteristics and educational levels, captured using the MLQ 5X short form (Avolio & Bass, 2014).

**Ethical Considerations**

Members of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979) highlighted the importance of ethics in research and this study adhered to the highest ethical standards, including those outlined in the commission’s *Belmont Report*. The *Belmont Report* includes three major areas of consideration for research involving human subjects: respect, beneficence, and justice. The study involved human participants who provided data about their experiences in the workplace. Ensuring the participants’ rights to privacy, respect, justice, beneficence, and freedom from coercion was a priority throughout the study. Collecting participants’ information was anonymous, and the data appear in total form to add extra protection to participant-level data.

There was no risk of an individual’s data being personally identifiable. To ensure the participants’ privacy, the researcher did not preserve the Internet Protocol address information collected by the SurveyMonkey platform in SPSS. This information remained on the SurveyMonkey server to prevent double survey submissions. The researcher did not store this information locally, the computer, which the individual completed the questionnaire, was not identifiable. All participants reviewed and received an informed consent before being able to proceed with the survey.

The informed consent included a review of the survey, of the data collected, of how the researcher would use the data, and of the individual’s right to refuse participation.
in the study or to cancel participation at any point in the process. Participants also received contact information for the researcher and an email address to use if felt that their rights, privacy, or confidentiality was at risk. As previously discussed, the data gained from the survey remained in a secure environment with the SurveyMonkey servers. Raw data for statistical analysis from SurveyMonkey remained on a password-protected computer in a safe environment. The researcher imported data into SPSS, completed the validation, and then deleted the data from SurveyMonkey.

The IRB at Columbia Southern University reviewed the methodology for the study for appropriateness and adherence to ethical standards for human research before data collection began. The IRB approved the first manuscript as suitable and ethical for doctoral research. There were no conflicts of interest with this study, and the study involved no known risks to participants. The participants were volunteers and did not receive compensation for their participation. The participants had the choice to withdraw from the study without penalty. This information notice included the purpose of the study, the role of the researcher in the study, how the study results would be available upon completion, assurances of confidentiality of the collected information, and participants’ right to withdraw from the study. Participants received the researcher’s personal contact information should any questions or concerns about the study arise. The data will remain in the researcher’s possession for a minimum of 3 years and then the researcher will destroy them by the minimum retention periods legislation for relevant records.
Limitations

Limitations are impediments to explaining the internal or external validity of a study (Alyn, 2011). This study included five main limitations. First, the study included a purposeful sampling method, which served to limit the statistical analysis to support the study hypotheses. Second, using an online survey resulted in a lower response rate than if the researcher contacted potential participants directly, through the telephone, or through the mail (Alyn, 2011). Third, the researcher limited the sample to the NFA/EFO Officer Program senior-level students employed throughout the United States.

The survey included a self-administered, Internet-based survey, limited-access to participants who had Internet access, individuals with U.S. fire service supervisory responsibilities and higher education levels. The MLQ 5X short form is a self-report measurement tool researcher’s use to measures leadership subscales similar to transformational, transactional, and passive-avoidant leadership characteristics (Avolio & Bass, 2014). Fourth, the study included a quantitative methodology. This methodology did not account for making meaning, encompass the complexity of leadership, or capture the abstract dynamics of the social relationships that exist within the organization. Finally, the researcher limited the study by assuming each participant took the fitting amount of time necessary to understand each question and provide responses that were accurate to the best of their knowledge.

Summary

The purpose of this quantitative descriptive study was to identify the leadership characteristics and educational levels prevalent among senior-level fire service personnel in the United States. This study included two independent variables, leadership
characteristics, and educational levels captured by using the MLQ 5X short form (Avolio & Bass, 2014). The topic of the research questions was whether transformational leadership is the prevalent leadership characteristic among senior-level fire service personnel in the United States.

Another subject of the research questions was the routine leadership characteristic and educational levels needed for senior-level fire officer positions. Introducing the NFA/EFO Program occurred in 1983, with the first graduation occurring in July 1987 (USFA, 2010). Every year, the NFA/EFO Program receives 300 applications and accepts 225 for the 4-year program; the Executive Fire Officer Program had 3,571 graduates by 2010 (USFA, 2010). At any one time, there is an average of 1,000 students; thus, this study involved contacting the current 1,000 students (USFA, 2010).

The MLQ 5X short form is the tool commonly used to measure transactional and transformational leadership (Avolio & Bass, 2014). Bass (2013) developed the survey tool, which has changed over 30 years based on various studies in both the public and the private sector. The foundational leadership characteristics of transactional, transformational, and passive-avoidant leadership form a framework for gaining a deeper understanding of the effects that leadership characteristic can create (Bass, 2013).

The data collection included using the SurveyMonkey survey tool. The informed consent form included reporting information and the participants would remain anonymous. Their participation would be voluntary, and would be able to stop taking part after the survey began. Analyzing the collected data included using SPSS to conduct descriptive statistics. Data analysis began after exporting participants’ response data from SurveyMonkey to the statistical software program.
Chapter 4 includes the data analysis and results for the study. Chapter 4 includes a summary of the collected data, an explanation of how data analysis will occur, and the results of the study. Finally, Chapter 4 contains research details of the data analysis and results using written information and tables to ensure readability and clarity of findings. Chapter 5 includes interpretations of the findings and recommendations of action and future research.
Chapter 4: Data Analysis and Results

Introduction

This study examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the United States fire service organizational culture. This quantitative descriptive leadership study included the leadership characteristics and educational levels of 465 senior-level NFA/EFO students. The MLQ 5X short form encompassed a broad range of leadership characteristics and educational levels in the fire service. The U.S. fire service profession is a lifelong occupation in which employees feel proud for whom the public respects (Daugherty, 2012). To master the fire service profession, individuals must receive training and education (Daugherty, 2012).

Purpose

The purpose of this quantitative descriptive study was to identify the leadership characteristics and educational levels prevalent among senior-level fire service personnel in the United States. Two independent variables, leadership characteristic and educational levels, using the MLQ 5X short form was examined (Avolio & Bass, 2014). The dependent variable is the organizational culture. This study contributed to the field of knowledge through an examination of how the independent variables met the needs of senior-level fire service personnel, originating from the MLQ 5X short form (Avolio & Bass, 2014). To reach a suitable sample size based on a G*Power analysis, the study population was sent via email to 1,000 NFA/EFO senior-level students employed throughout the United States. At least 278 surveys were necessary to earn a 95%
confidence level with a margin of error of 5%. This study obtained 465 completed surveys, demonstrating a 3.3% margin of error.

Quantitative research predominantly includes cost-effective surveys as a means to discover specific organizational influences (Grohmann & Kauffeld, 2013). Quantitative, survey-based research approach is suitable because of the ease of managing them to various participants, as well as calculating the information (Grohmann & Kauffeld, 2013). Quantitative studies with self-administered surveys are easier to manage and suited for data collection intended for statistical analysis (Vespie, 2010). This study was nonexperimental, as there was no control group (Trochim, 2006). This study included the descriptive statistical design of the population (McNabb, 2008).

Research Questions and Hypotheses

The research questions and hypotheses for this quantitative study were as follows:

R1: Does a significant correlation exist between leadership characteristics of senior-level personnel and the United States fire service organizational culture?

H10: There is no significant correlation between leadership characteristics of senior-level personnel and the United States fire service organizational culture.

H1a: There is a significant correlation between leadership characteristics of senior-level personnel and the United States fire service organizational culture.
R2: Does a significant correlation exist between the level of education of senior-level personnel and the United States fire service organizational culture?

H20: There is no significant correlation between the level of education of senior-level personnel and the United States fire service organizational culture.

H2a: There is a significant correlation between the level of education of senior-level personnel and the United States fire service organizational culture.

The topic of the first research questions asks does a significant correlation exist between leadership characteristics of senior-level personnel and the United States fire service organizational culture. The topic of the second research question asks does a significant correlation exist between the level of education of senior-level personnel and the United States fire service organizational culture. Chapter 4 includes the collected data, statistical analysis, a summary of the survey information, the data collection, and statistical analysis, and the results of the survey. Chapter 4 also includes research details to clarify the findings and to ensure their readability.

**Descriptive Data**

The research survey did not include any questions for specific demographic data, nor did the researcher collect any specific demographic data from the NFA/EFO Program students for this study. Researchers for the National Fire Protection Association yearly invite information for the annual *US Fire Department Profile* report and organize it according to age groups. Figure 3 contains the shared national demographic data that reflect senior-level fire service personnel, and meeting the National Fire Protection
Association minimum standards for firefighter qualifications. In 2013, the U.S. fire service included 1,140,750 firefighters and 30,052 fire departments (Clark, 2015).

![United States Fire Department Profile, 2013 Firefighters and Departments](image)

**Figure 3.** Reprinted with permission from NFPA’s report, “U.S. Fire Department Profile” by Hylton J. G. Haynes, Gary P. Stein, Copyright © 2014, National Fire Protection Association. Permission is located in Appendix F.

U.S. Fire Department Profile explained that 354,600 (31%) were career firefighters, and 786,150 (69%) were volunteer firefighters (Haynes & Stein, 2014). Career firefighters (71%) worked in communities that protected 25,000 or more people, while Volunteer firefighters (95%) were in departments that protected fewer than 25,000 people (Haynes & Stein, 2014). Career firefighters worked in 2,477 departments, 1,971 had career firefighters, 5,797 had volunteer firefighters, and 19,807 had all volunteers (Haynes & Stein, 2014). Volunteer personnel work 80% of fire departments, with the remaining 20% worked by career personnel (Clark, 2015). Figure 4 includes the type and population protected by career and volunteer fire departments.
Figure 4. Reprinted with permission from NFPA’s report, “U.S. Fire Department Profile” by Hylton J. G. Haynes, Gary P. Stein, Copyright © 2014, National Fire Protection Association. Permission is located in Appendix F.

Age of firefighters ranges from 16 years old to over 60 years old (Haynes & Stein, 2014). Figure 5 include the breakdown of firefighters’ ages nationwide. Twenty-three percent of the firefighters are under the age of 30, while 24% are over the age of 50. The majority, 52%, are between 30 years old and 49 years old.

Figure 5. Reprinted with permission from NFPA’s report, “U.S. Fire Department Profile” by Hylton J. G. Haynes, Gary P. Stein, Copyright © 2014, National Fire Protection Association. Permission is located in Appendix F.
The population for this study was 465 senior-level students participating in the NFA/EFO Program. The NFA/EFO Program first occurred in 1983, with the first class of executive fire officer students graduating in July 1987 (USFA, 2010). Every year, the NFA/EFO Program receives 300 applications and accepts 225 for the 4-year program; the Executive Fire Officer Program had 3,571 graduates between 1987 and 2010 (USFA, 2010). At any one time, there is an average of 1,000 students; thus, the population for this study was the current 1,000 students.

**Data Analysis Procedures**

The data collection approach for this study included the MLQ 5X short form survey instrument delivered to 1,000 NFA/EFO Program senior-level students employed throughout the United States (Avolio & Bass, 2014). A timeline of 30 days served as a guide to managing the survey instrument. A timeline of 15 days was suitable for collecting, totaling, and analyzing the data, as well as interpreting and spreading the results. The study included information gathered from the MLQ 5X short form and data from the National Fire Protection Association (Avolio & Bass, 2014).

Of the 473 surveys received, 465 surveys were complete. The researcher organized the MLQ 5X short form instructions and current data from the National Fire Protection Association’s *US Fire Department Profile 2013* (Haynes & Stein, 2014). The data included the statistical information, the total number of firefighters in the United States, the breakdown of career and volunteers, and age groups.

**Data Analysis**

Data analysis procedures included using the MLQ 5X short form and the SurveyMonkey survey research instrument and interpreting raw data using the descriptive
statistical design of the population (Avolio & Bass, 2014). The researcher organized the raw data into the MLQ 5X short form categories. The researcher used the MLQ 5X short form features to transcribe the raw data easily into SPSS for analysis (Avolio & Bass, 2014). The MLQ 5X short form categories appear in Table 1.

Table 1

Multifactor Leadership Questionnaire Categories

<table>
<thead>
<tr>
<th>Categories</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational</td>
<td>Idealized attributes or idealized influence (attributes)</td>
</tr>
<tr>
<td></td>
<td>Idealized behaviors or idealized influence (behaviors)</td>
</tr>
<tr>
<td></td>
<td>Inspirational motivation</td>
</tr>
<tr>
<td></td>
<td>Intellectual stimulation</td>
</tr>
<tr>
<td></td>
<td>Individual consideration</td>
</tr>
<tr>
<td>Transactional</td>
<td>Contingent reward</td>
</tr>
<tr>
<td></td>
<td>Management by exception (active)</td>
</tr>
<tr>
<td>Passive avoidant</td>
<td>Management by exception (passive)</td>
</tr>
<tr>
<td></td>
<td>Laissez-faire</td>
</tr>
<tr>
<td>Outcomes of leadership</td>
<td>Extra effort</td>
</tr>
<tr>
<td></td>
<td>Effectiveness</td>
</tr>
<tr>
<td></td>
<td>Satisfaction</td>
</tr>
</tbody>
</table>

The study included SPSS Version 22 to analyze descriptive statistics, which included frequency counts, means, percentages, and standard deviations to classify and analyze the demographic information and the employees’ views of leadership behavior and engagement. The participants responded to the MLQ 5X short form questions using a 5-point Likert-Type scale ranging from 0 (not at all) to 4 (frequently, if not always)
An example of the MLQ 5X short form questionnaire and the MLQ 5X short form scoring sheet is in Appendix A.

The G*Power software as a general stand-alone power analysis program for statistical tests commonly used in social and behavioral research (Faul, Erdfelder, Lang, & Buchner, 2007). G*Power 3 software has dedicated power analysis choices for various often used $t$ tests, $F$ tests, $z$ tests, $\chi^2$ tests, and exact tests. The primary reason for the data analysis procedure was to collect data uniformly and interpret the data using the Mind Garden format. This format is consistent with prior leadership research, thus serving to preserve uniformity and consistency. Data analysis aligned with the research methodology and design by providing a systematic strategic framework to previously identified leadership studies.

To reach a suitable sample size based on a G*Power analysis, the study population was sent via email to 1,000 NFA/EFO senior-level fire service students employed throughout the United States. At least 278 surveys were necessary to earn a 95% confidence level with a margin of error of 5%. This study obtained 465 completed surveys, demonstrating a 3.3% margin of error. Descriptive statistics (means and standard deviations) were suitable to discover if the researcher should accept or reject the null hypothesis for the two independent variables, leadership characteristics and educational levels, captured using the MLQ 5X short form (Avolio & Bass, 2014). The MLQ 5X short form, designed by Avolio and Bass (2014), was the instrument used to measure the results of this study, and researchers have already validated it and used it in previous research. The full range of leadership theory, using the MLQ 5X short form, displays consistent research analysis, and explains that transformational leadership characteristic
correlates with organizational culture (Avolio & Bass, 2014). Researchers have administered the MLQ 5X short form in hundreds of research settings since the early 1970s (Avolio & Bass, 2014). The MLQ 5X short form is a self-report measurement tool that researchers used to measure leadership subscales that match to transformational, transactional, and passive-avoidant leadership characteristics (Kanste et al., 2007).

Each research question and hypothesis aligned with the analysis, which resulted from the purpose of identifying the leadership characteristics and educational levels prevalent among senior-level fire service personnel in the United States. The researcher used the MLQ 5X short form to identify a broad range of leadership characteristics, and the results signaled the need for higher levels of education and transformational characteristics. An assumption was that each survey participant responded to each MLQ 5X short form question honestly; any deviation would increase suspicion (Avolio & Bass, 2014).

**Results**

**Research Question 1 and Hypotheses.** Does a significant correlation exist between leadership characteristics of senior-level personnel and the U. S. fire service organizational culture? In accordance to this research, a correlation does exist and the transformational leadership characteristic is prevalent among senior-level fire service personnel in the United States. Regarding H1₀, there is no significant correlation between leadership characteristics of senior-level personnel and the U. S. fire service organizational culture; H₁ₐ, there is a significant correlation between leadership characteristics of senior-level personnel and the U. S. fire service organizational culture. Based on the research, the alternative hypothesis is true: transformational leadership
characteristics are prevalent among senior-level fire service personnel in the United States. Table 2 represents the characteristic and scale name as compared to the MLQ 5X question posed in the survey instrument.

Table 2

*Multifactor Leadership Questionnaire Variables*

<table>
<thead>
<tr>
<th>Characteristic and scale name</th>
<th>Questions / items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transformational</strong></td>
<td></td>
</tr>
<tr>
<td>Idealized attributes or idealized influence (attributes)</td>
<td>10, 18, 21, 25</td>
</tr>
<tr>
<td>Idealized behaviors or idealized influence (behaviors)</td>
<td>6, 14, 23, 34</td>
</tr>
<tr>
<td>Inspirational motivation</td>
<td>9, 13, 26, 36</td>
</tr>
<tr>
<td>Intellectual stimulation</td>
<td>2, 8, 30, 32</td>
</tr>
<tr>
<td>Individual consideration</td>
<td>15, 19, 29, 31</td>
</tr>
<tr>
<td><strong>Transactional</strong></td>
<td></td>
</tr>
<tr>
<td>Contingent reward</td>
<td>1, 11, 16, 35</td>
</tr>
<tr>
<td>Management by exception (active)</td>
<td>4, 22, 24, 27</td>
</tr>
<tr>
<td><strong>Passive avoidant</strong></td>
<td></td>
</tr>
<tr>
<td>Management by exception (passive)</td>
<td>3, 12, 17, 20</td>
</tr>
<tr>
<td>Laissez-Faire</td>
<td>5, 7, 28, 33</td>
</tr>
<tr>
<td><strong>Outcomes of leadership</strong></td>
<td></td>
</tr>
<tr>
<td>Extra effort</td>
<td>39, 42, 44</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>37, 40, 43, 45</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>38, 41</td>
</tr>
</tbody>
</table>

The researcher added one question regarding education levels and measured all the questions using a 5-point Likert-Type scale from 0 (*not at all*) to 4 (*frequently, if not always*). The study included descriptive statistics and a frequency distribution to set up a profile of the study population. Analysis involved calculating mean scores and standard
deviations for transformational, transactional, and passive-avoidant leadership characteristic scores. Transformational leadership variables include idealized influence (attributed), idealized influence (behavior), inspirational motivation, intellectual stimulation, and individual consideration. The transformational leadership variables appear in Table 3.

Table 3

Transformational Leadership MLQ 5X short form Subscale Results and Statistics

<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>M</th>
<th>SD</th>
<th>Low</th>
<th>High</th>
<th>Mdn</th>
<th>MLQ percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idealized attributes</td>
<td>2.95</td>
<td>0.48</td>
<td>1.25</td>
<td>4.00</td>
<td>3.00</td>
<td>40</td>
</tr>
<tr>
<td>Idealized behaviors</td>
<td>3.10</td>
<td>0.53</td>
<td>1.25</td>
<td>4.00</td>
<td>3.00</td>
<td>50</td>
</tr>
<tr>
<td>Inspirational motivation</td>
<td>3.13</td>
<td>0.51</td>
<td>1.00</td>
<td>4.00</td>
<td>3.00</td>
<td>50</td>
</tr>
<tr>
<td>Intellectual stimulation</td>
<td>2.95</td>
<td>0.52</td>
<td>1.00</td>
<td>4.00</td>
<td>3.00</td>
<td>40</td>
</tr>
<tr>
<td>Individual consideration</td>
<td>3.11</td>
<td>0.51</td>
<td>1.00</td>
<td>4.00</td>
<td>3.00</td>
<td>50</td>
</tr>
</tbody>
</table>

Note. n = 465.

Idealized influence (attributed) represents a leader’s charismatic ability to display power and confidence while instilling pride in subordinates through the leader–follower relationship (Avolio & Bass, 2014). Leaders with charismatic qualities are highly motivated and able to work with enthusiasm to achieve high results (Sandybayev & Yılmaz, 2015). Questions 10, 18, 21, and 25 matched to the senior-level fire service personnel’s idealized influence (attributed). The mean score was 2.95 (SD = .48), which means the participants measured similar idealized influence (attributed) behaviors in relation to the MLQ 5X short form sample (Avolio & Bass, 2014).

Idealized influence behaviors characterize a leader’s high ethical and moral standards serving as a role model for subordinates and underline the importance of shared organizational mission (Avolio & Bass, 2014). Questions 6, 14, 23, and 24 matched to
the senior-level fire service personnel’s idealized influence behaviors. The mean score was 3.10 \((SD = .53)\), which means the participants had similar idealized influence behavior towards the MLQ 5X short form sample (Avolio & Bass, 2014).

Inspirational motivation leaders provide meaning and challenge to subordinates’ work by encouraging enthusiasm and group motivation (Avolio & Bass, 2014). Inspirational motivation to be useful in businesslike organizational cultures (Phipps, Prieto, & Verma, 2012). Leaders who practice inspirational motivation develop closer relationships with their subordinates, which then increase the likelihood of employees striving and responding to greater levels of challenge (Phipps, Prieto, & Verma, 2012). Questions 9, 13, 26, and 36 matched to the senior-level fire service personnel’s inspirational motivation behaviors. The mean score was 3.13 \((SD = .51)\), which means the participants had significantly higher inspirational motivation behaviors towards the MLQ 5X short form sample (Avolio & Bass, 2014).

Intellectual stimulation challenges followers to be innovative through creative problem solving in a nonjudgmental environment (Avolio & Bass, 2014). Intellectual stimulation ensures that employees question the status quo and encourage a stream of ideas for the organizations benefit (Engelen, Gupta, Strenger, & Brettel, 2015). Questions 2, 8, 30, and 32 matched to the senior-level fire service personnel’s intellectual stimulation behaviors. The mean score was 2.95 \((SD = .52)\), which means the participants had nonsignificant intellectual stimulation behaviors towards the MLQ 5X short form sample (Avolio & Bass, 2014). Finally, leaders embracing individualized consideration provided a supportive climate, often acting as mentors and coaches to enable followers to develop their strengths (Avolio & Bass, 2014). Managers provide individualized
consideration to employees and create a protective culture that positively affects employees’ commitment to and effective implementation of the organizational culture (Engelen, Gupta, Strenger, & Brettel, 2015).

Questions 15, 19, 29, and 31 matched to the senior-level fire service personnel’s individualized consideration behaviors. The mean score was 3.11 (SD = .51), which means the participants had slightly lower individualized consideration behaviors towards the MLQ 5X short form sample (Avolio & Bass, 2014). Table 3 included the results for the five subscales for transformational leadership. The basis of the ratings was a 5-point metric, ranging from 0 = not at all to 4 = frequently, if not always. The highest subscale was inspirational motivation (M = 3.13), and the lowest subscales were idealized attributes (M = 2.95) and intellectual stimulation (M = 2.95).

Transactional leadership variables are contingent reward and management by exception (active). Contingent reward leaders ascertain organizational expectations and reward subordinates when achieving specific goals based from performance measures (Avolio & Bass, 2004). Transactional contingent reward leadership includes the setting of clear expectation and providing a form of reward to the follower in accordance with organizational cultural expectation (Geier, 2016).

Questions 1, 11, 16, and 35 matched to the senior-level fire service personnel’s individualized consideration behaviors. The mean score was 2.98 (SD = .55), which means the participants had slightly lower contingent reward behaviors towards the MLQ 5X short form sample (Avolio & Bass, 2014). The transactional leadership variables appear in Table 4.
Table 4

*Transactional Leadership MLQ 5X short form Subscale Results and Statistics*

<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>M</th>
<th>SD</th>
<th>Low</th>
<th>High</th>
<th>Mdn</th>
<th>MLQ percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contingent reward</td>
<td>2.98</td>
<td>0.55</td>
<td>0.75</td>
<td>4.00</td>
<td>3.00</td>
<td>40</td>
</tr>
<tr>
<td>Management by exception—active</td>
<td>1.74</td>
<td>0.64</td>
<td>0.00</td>
<td>4.00</td>
<td>1.75</td>
<td>40</td>
</tr>
</tbody>
</table>

*Note. n = 465.*

The management-by-exception (active) leadership behavior specifies compliance and performance standards, and its focus is realized substandard performance, mistakes, and failures (Avolio & Bass, 2014). Transactional management by exception (MBE) could be active or passive (Geier, 2016). In management by exception, the leader focuses on corrective behavior (Geier, 2016). If the leader acts according to management by exception - active, the leaders monitors the actions taken by the follower and apply corrective actions as soon as they occur (Geier, 2016). If the leader acts with management by exception - passive, the leader will passively wait for problems brought attention and then take corrective actions (Geier, 2016). Questions 4, 22, 24, and 27 matched to the senior-level fire service personnel’s management-by-exception (active) behaviors. The mean score was 1.74 (SD = .64), which means the participants had significantly higher management-by-exception (active) behaviors towards the MLQ 5X short form sample (Avolio & Bass, 2014). The results for the two transactional leadership subscales appeared in Table 4. The basis of the ratings was a 5-point metric from 0 = *not at all* to 4 = *frequently, if not always*. The highest subscale was contingent reward (M = 2.98) and the lowest subscale was management by exception (active; M = 1.74).

Finally, passive-avoidant variables are management by exception (passive) and laissez-faire. Management-by-exception (passive) leadership behavior involves leaders
passively waiting for chronic problems to occur before taking action (Avolio & Bass, 2014). Questions 3, 12, 17, and 20 matched to the senior-level fire service personnel’s management-by-exception (passive) behaviors. The mean score was .93 (SD = .54), which meant the participants measured lower management-by-exception (passive) behaviors towards the MLQ 5X short form sample (Avolio & Bass, 2014). The passive-avoidant leadership variables appear in Table 5.

Table 5

Passive-Avoidant Leadership MLQ 5X short form Subscale Results and Statistics

<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>M</th>
<th>SD</th>
<th>Low</th>
<th>High</th>
<th>Mdn</th>
<th>MLQ percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management by exception (passive)</td>
<td>0.93</td>
<td>0.54</td>
<td>0.00</td>
<td>3.00</td>
<td>1.00</td>
<td>40</td>
</tr>
<tr>
<td>Laissez-faire</td>
<td>0.53</td>
<td>0.46</td>
<td>0.00</td>
<td>2.25</td>
<td>0.50</td>
<td>40</td>
</tr>
</tbody>
</table>

Note. n = 465.

The laissez-faire leader avoids deciding and becoming involved, and the leadership style involves an absence of leadership and direction (Avolio & Bass, 2014). As a passive leadership style in which leaders avoid interaction with their followers by keeping long social distances and avoiding confronting problems, which affect the organizational culture (Wong and Giessner, 2015). Questions 5, 7, 28, and 33 matched to the senior-level fire service personnel’s laissez-faire behaviors. The mean score was .53 (SD = .46), which means the participants had significantly lower laissez-faire behaviors towards the MLQ 5X short form sample (Avolio & Bass, 2014).

Table 5 included the results for the two passive-avoidant leadership subscales. The basis for the ratings was a 5-point metric ranging from 0 = not at all to 4 = frequently, if not always (Avolio & Bass, 2014). The high subscale was management by exception (passive; M = 0.93) and the low subscale was laissez-faire (M = 0.53).
Leadership outcomes variables include extra effort, effectiveness, and satisfaction with the leadership. Outcomes of leadership appear in both transformational and transactional leadership characteristics. In addressing the extra effort variable, the senior-level fire service personnel’s willingness to exert extra effort reflects a leader’s ability to challenge others to do more than expected (Avolio & Bass, 2014). Employees benefit from their leader’s behavior, feel obliged to reciprocate through positive attitudes and behaviors that are valued by their leader and the organization’s culture (Bedi, Alpaslan, & Green, 2015). Such high quality exchange relationships are due to ethical leaders’ honesty, transparency, and two-way communication (Bedi, Alpaslan, & Green, 2015). Questions 39, 42, and 44 matched to the subordinates’ willingness to exert extra effort. The mean score was 2.87 ($SD = .58$), which means the participants had significantly higher extra effort behaviors towards the MLQ 5X short form sample (Avolio & Bass, 2014). The leadership outcome variables appear in Table 6.

Table 6

<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>$M$</th>
<th>$SD$</th>
<th>Low</th>
<th>High</th>
<th>$Mdn$</th>
<th>MLQ percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness</td>
<td>3.25</td>
<td>0.45</td>
<td>1.50</td>
<td>4.00</td>
<td>3.25</td>
<td>60</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>3.19</td>
<td>0.50</td>
<td>1.00</td>
<td>4.00</td>
<td>3.00</td>
<td>50</td>
</tr>
<tr>
<td>Extra effort</td>
<td>2.87</td>
<td>0.58</td>
<td>1.00</td>
<td>4.00</td>
<td>3.00</td>
<td>40</td>
</tr>
</tbody>
</table>

Note. $n = 465$.

Effectiveness relates to the senior-level fire service personnel’s views of leader effectiveness, and its basis is the leader’s effectiveness (Avolio & Bass, 2014). Questions 37, 40, 43, and 45 matched to the senior-level fire service personnel’s view of leader effectiveness. The mean score was 3.25 ($SD = .45$), which means the participants
measured significantly higher effectiveness towards the MLQ 5X short form sample (Avolio & Bass, 2014).

Finally, the satisfaction variable identified the senior-level fire service personnel’s satisfaction with other leaders and dealt with leaders who use satisfying leadership methods and work with others in a satisfactory fashion (Avolio & Bass, 2014). Questions 38 and 41 matched to the senior-level fire service personnel’s views of overall satisfaction. The mean score was 3.19 (SD = .50), which means the senior-level fire service personnel had higher levels of satisfaction towards the MLQ 5X short form sample (Avolio & Bass, 2014).

The results of the three leadership outcome subscales appear in Table 6. The basis of the ratings was a 5-point metric ranging from 0 = not at all to 4 = frequently, if not always (Avolio & Bass, 2014). The highest subscale was effectiveness (M = 3.25) and the lowest subscale was extra effort (M = 2.87).

Expressed by the leadership total scores from the MLQ 5X short form, the transformational characteristic (M = 3.05, SD = .41) was more prevalent than the transactional characteristic (M = 2.36, SD = .45) and the passive-avoidant characteristic (M = .73, SD = .42). The results of the three primary leadership scale scores are in Table 7. The basis of the ratings was a 5-point metric ranging from 0 = not at all to 4 = frequently, if not always (Avolio & Bass, 2014). The highest scale was transformational (M = 3.05) and the lowest subscale was passive-avoidant (M = 0.73). The leadership aggregate variables appear in Table 7.
Table 7

_Leadership Aggregate Scores from MLQ 5X short form Subscale Results and Statistics_

<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>M</th>
<th>SD</th>
<th>Low</th>
<th>High</th>
<th>Mdn</th>
<th>MLQ percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational</td>
<td>3.05</td>
<td>0.41</td>
<td>1.35</td>
<td>4.00</td>
<td>3.05</td>
<td>50</td>
</tr>
<tr>
<td>Transactional</td>
<td>2.36</td>
<td>0.45</td>
<td>1.00</td>
<td>3.88</td>
<td>2.38</td>
<td>50</td>
</tr>
<tr>
<td>Passive / Avoidant</td>
<td>0.73</td>
<td>0.42</td>
<td>0.00</td>
<td>2.25</td>
<td>0.75</td>
<td>40</td>
</tr>
</tbody>
</table>

_Note._ n = 465.

Organizational culture and transformational leadership have been theoretically and empirically associated to organizational effectiveness (Bass & Avolio, 2004). Bass and Avolio (2004) have argued that leadership and culture are so well interconnected that it is possible to describe an organizational culture characterized by transformational qualities. The achievement of participating in a highly productive organizational culture has a strong positive and direct effect on performance and organizational effectiveness (Bass & Avolio, 2004).

The researcher used _t_ tests to compare the MLQ 5X short form responses for the 465 senior-level fire service executives against the means provided by Avolio and Bass (2014). This information based on MLQ 3,375 general manager self-ratings. The specific comparisons involved transformational leadership subscales, transactional leadership subscales, and the passive-avoidant leadership subscales.

Addressed are the MLQ 5X short form primary scale scores, and the leadership outcome scores (Avolio & Bass, 2014). The _t_ test comparisons for the five transformational leadership subscale scores when compared to the MLQ 5X short form norm data from Avolio and Bass (2014) appear in Table 8. The fire service executives had significantly higher MLQ 5X short form scores for idealized behaviors (_p_ = .001) and...
inspirational motivation ($p = .001$), and significantly lower mean scores for individual consideration ($p = .03$).

Table 8

*t Tests Comparing Transformational Leadership Subscales with Avolio and Bass’s (2004) Standardized Sample*

<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>MLQ norms</th>
<th>Sample M</th>
<th>t</th>
<th>p</th>
<th>M difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idealized attributes</td>
<td>2.95</td>
<td>2.95</td>
<td>0.22</td>
<td>.83</td>
<td>0.001</td>
</tr>
<tr>
<td>Idealized behaviors</td>
<td>2.99</td>
<td>3.10</td>
<td>4.17</td>
<td>.001</td>
<td>0.14</td>
</tr>
<tr>
<td>Inspirational motivation</td>
<td>3.04</td>
<td>3.13</td>
<td>3.91</td>
<td>.001</td>
<td>0.09</td>
</tr>
<tr>
<td>Intellectual stimulation</td>
<td>2.96</td>
<td>2.95</td>
<td>-0.41</td>
<td>.68</td>
<td>-0.01</td>
</tr>
<tr>
<td>Individual consideration</td>
<td>3.16</td>
<td>3.11</td>
<td>-2.13</td>
<td>.03</td>
<td>-0.05</td>
</tr>
</tbody>
</table>

* $n = 3,375.$

The *t* test comparisons for the two transactional leadership subscale scores when compared to the MLQ 5X short form norm data from Avolio and Bass (2014) appear in Table 9. The fire service executives had significantly higher MLQ 5X short form scores for management by exception (active; $p = .001$). The scores were similar for contingent reward ($p = .74$).

Table 9

*t Tests Comparing Transactional Leadership Subscales with Avolio and Bass’s (2004) Standardized Sample*

<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>MLQ norms</th>
<th>Sample M</th>
<th>t</th>
<th>p</th>
<th>M difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contingent reward</td>
<td>2.99</td>
<td>2.98</td>
<td>-0.33</td>
<td>.74</td>
<td>-0.01</td>
</tr>
<tr>
<td>Management by exception (active)</td>
<td>1.58</td>
<td>1.74</td>
<td>5.52</td>
<td>.001</td>
<td>0.16</td>
</tr>
</tbody>
</table>

* $n = 3,375.$
The $t$ test comparisons for the two passive-avoidant leadership subscale scores when compared to the MLQ 5X short form norm data from Avolio and Bass (2014) appear in Table 10. Inspection of the table found the current sample of fire service executives to have significantly lower MLQ 5X short form scores for MBEP ($p = .001$) and laissez-faire leadership ($p = .001$).

Table 10


<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>MLQ norms $^a$</th>
<th>Sample $M$</th>
<th>$t$</th>
<th>$p$</th>
<th>$M$ difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management by exception (passive)</td>
<td>1.07</td>
<td>0.93</td>
<td>-5.56</td>
<td>.001</td>
<td>-0.14</td>
</tr>
<tr>
<td>Laissez-faire</td>
<td>0.61</td>
<td>0.53</td>
<td>-3.94</td>
<td>.001</td>
<td>-0.08</td>
</tr>
</tbody>
</table>

$^a n = 3,375.$

The $t$ test comparisons for the three primary leadership scores when compared to the MLQ 5X short form norm data from Avolio and Bass (2014) appear in Table 11. The fire service executives had significantly lower MLQ 5X short form scores for transactional leadership ($p = .001$) and passive-avoidant leadership ($p = .001$). Scores for transactional leadership were similar ($p = .07$).

Table 11


<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>MLQ norms $^a$</th>
<th>Sample $M$</th>
<th>$t$</th>
<th>$p$</th>
<th>$M$ difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational</td>
<td>3.02</td>
<td>3.05</td>
<td>1.82</td>
<td>.07</td>
<td>0.03</td>
</tr>
<tr>
<td>Transactional</td>
<td>2.99</td>
<td>2.36</td>
<td>3.53</td>
<td>.001</td>
<td>0.07</td>
</tr>
<tr>
<td>Passive-avoidant</td>
<td>0.84</td>
<td>0.72</td>
<td>-5.77</td>
<td>.001</td>
<td>-0.11</td>
</tr>
</tbody>
</table>

$^a n = 3,375.$
The $t$-test comparisons for the three leadership outcome scores when compared to the MLQ 5X short form norm data from Avolio and Bass (2014) appear in Table 12. The fire service executives had significantly higher scores for effectiveness ($p = .001$), satisfaction ($p = .001$), and extra effort ($p = .001$).

Table 12

$t$ Tests Comparing Leadership Outcomes Subscales with Avolio and Bass’s (2004) Standardized Sample

<table>
<thead>
<tr>
<th>Leadership scale</th>
<th>MLQ norms $^a$</th>
<th>Sample $M$</th>
<th>$t$</th>
<th>$p$</th>
<th>$M$ difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness</td>
<td>3.14</td>
<td>3.25</td>
<td>5.01</td>
<td>.001</td>
<td>0.11</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>3.09</td>
<td>3.19</td>
<td>4.31</td>
<td>.001</td>
<td>0.10</td>
</tr>
<tr>
<td>Extra effort</td>
<td>2.79</td>
<td>2.87</td>
<td>3.01</td>
<td>.003</td>
<td>0.08</td>
</tr>
</tbody>
</table>

$^a n = 3,375.$

**Research Question 2 and Hypotheses.** Does a significant correlation exist between the level of education of senior-level personnel and the United States fire service organizational culture? Based on the research, there is no significant correlation between the level of education of senior-level personnel and the U. S. fire service organizational culture. Senior-level fire service personnel who were participants of the NFA/EFO Program (91.6%) gained a bachelor’s degree, and 48.4% gained a graduate degree.

Based on the U.S. Census (2014), 14.9% of Americans have a bachelor’s degree and 7.3% have some graduate degree. According to the sample, senior-level fire service personnel are significantly better educated than adults are. Appendix D illustrates the details of years of school completed by adults 25 years and over, by sex, age group, race, and Hispanic origin in 2014. Levels of education appear in Table 13.
Table 13
Comparison of Education Levels between the Sample and Census Data
Note. Data source was U.S. Census Bureau (2014) and based on 209,287,000 adults.

<table>
<thead>
<tr>
<th>Education</th>
<th>n</th>
<th>%</th>
<th>Census</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school or less</td>
<td>0</td>
<td>0.0</td>
<td>71.5</td>
</tr>
<tr>
<td>Some college</td>
<td>3</td>
<td>0.6</td>
<td>2.6</td>
</tr>
<tr>
<td>Associate’s degree</td>
<td>36</td>
<td>7.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>201</td>
<td>43.2</td>
<td>14.9</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>225</td>
<td>48.4</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Educational attainment is a well-documented path to economic success (Crissey & Bauman, 2010). Apart from the recognized benefits of a bachelor’s degree, research documents benefits for sub-baccalaureate education such as associate degree programs (Crissey & Bauman, 2010). According to the U. S. Census Bureau, the relationship between education and earnings is a long-analyzed topic of study. Generally, there is a strong belief that achievement of higher levels of education is a well-established path to better jobs and increased earnings (Julian & Kominski, 2011). Occupation is often the mechanism by which education relates to earnings (Julian & Kominski, 2011). Higher levels of education allow people access to more specialized jobs that are often associated with high pay (Julian & Kominski, 2011).

Organizational culture and transformational leadership have been theoretically and empirically associated to organizational effectiveness (Athena & Maria, 2006). Leadership and organizational culture are so well interconnected that it is possible to describe an organizational culture characterized by transformational qualities (Athena & Maria, 2006). The achievement of participating in a highly productive organizational culture has a strong positive and direct effect on performance and organizational
effectiveness (Athena & Maria, 2006). This study’s results place evidence that when organizations seek higher levels of education of their workforce, the result is elevated productivity (Berger & Fisher, 2013). Investing in education is fundamental, which can improve the well-being of their residents and community (Berger & Fisher, 2013). Higher education is a valuable and necessary component for successfully leading the U. S. fire service (Clark, 2015). Senior-level fire service personnel must combine this with training, experience, and self-development to produce a well-rounded skill set (Clark, 2015).

Summary

The study involved collecting responses from 465 completed survey participants through the SurveyMonkey platform. After the survey closed, the researcher downloaded, verified, coded, and uploaded the data to SPSS. Chapter 4 included a discussion of the descriptive statistics of respondents, data collection, data analysis, and results. Descriptive statistics was suitable for expressing and understanding the two independent variables, leadership characteristics, and educational levels, captured by using the MLQ 5X short form (Avolio & Bass, 2014).

The research results of this study included that a significant correlation exists between leadership characteristics and there is no significant level of education of senior-level personnel and the United States fire service organizational culture. A need of the National Fire Academy is that candidates gain a bachelor’s degree before sending an application for the NFA/EFO Program. NFA/EFO senior-level fire service personnel (91.6% of this sample) had gained a bachelor’s degree and many (48.4%) strongly stressed getting a graduate degree.
Hypothesis 1, 11 of the 15 MLQ 5X short form scores were significantly different between the current senior-level fire executive sample, and the Avolio and Bass (2014) sample. Senior-level United States fire service personnel had the largest differences in increased frequency for idealized influence behavior ($M = +0.14$) and management by exception (active; $M = +0.16$). The participants were more likely to be less frequent in their use of passive-avoidant leadership ($M = -0.14$). Hypothesis 2, the senior-level United States fire service personnel sample had a significantly more advanced education when compared to U.S. Census data (Table 13). Chapter 5 includes a comprehensive summary, conclusions, recommendations, and theoretical, practical, and future implications of the findings. Chapter 5 also includes a description of recommendations for future research and for applications of the information presented in this study to practice.
Chapter 5: Summary, Conclusions, and Recommendations

Introduction

Understanding leadership characteristics and education levels prevalent in the United States Fire Service, comparable to businesslike organizations, have not been identified (Clark, 2015). This study examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the U. S. fire service organizational culture. Quantitative descriptive design examined the leadership characteristics and educational levels of 1,000 senior-level students of the U.S. Department of Homeland Security, U.S. Fire Administration (USFA), and National Fire Academy Executive Fire Officer Program (NFA/EFO). This researcher engaged the Multifactor Leadership Questionnaire (MLQ 5X short form) in identifying leadership characteristics and educational levels in the United States fire service (Avolio & Bass, 2014).

The two independent variables include leadership characteristics and educational levels. The dependent variable is the organizational culture. The MLQ 5X short form captured the research. The U.S. fire service profession is a publicly respected, lifelong occupation that allows a person to feel proud (Daugherty, 2012). Individuals wanting to master the fire service profession must receive training and education (Daugherty, 2012). Results of this study contributed to the field by identifying which leadership characteristics and educational levels are essential to lead fire and emergency service organizations successfully.

The benefits of higher education are an innate part of a profession (Clark, 2015). The fire service takes professionalism seriously, and should do more to promote fire
science and leadership characteristics as an academic discipline (Clark, 2015). Earning higher levels of education and understanding leadership characteristics would serve as contributing factors to lessen the effects of disastrous events (Clark, 2015). The positive result will yield lower casualty rates and overall financial costs, but failing to meet the challenges will result in higher levels of incompetence and extraordinary expenses from catastrophes (Clark, 2015). Chapter 5 includes a summary of the study, a summary of the findings, conclusions, implications, and recommendations. The summary section includes a review of the entire study and highlights significant points from Chapters 1 through 3. Finally, Chapter 5 includes the study’s theories, practicality, and future implications and closes with recommendations for further study and action.

**Summary of the Study**

This study examines if a significant correlation exists between leadership characteristics and level of education of senior-level personnel and the United States fire service organizational culture. The sample for this study consisted of 465 senior-level fire service personnel. The purpose of this quantitative descriptive study was to identify the leadership characteristics and educational levels prevalent among senior-level fire service personnel in the United States. Two independent variables, leadership characteristic and educational levels, using the MLQ 5X short form was examined (Avolio & Bass, 2014).

The research study questions were as follows. Does a significant correlation exist between leadership characteristics of senior-level personnel and the U. S. fire service organizational culture? Does a significant correlation exist between the level of education of senior-level personnel and the U. S. fire service organizational culture? Two
independent variables, leadership characteristic and educational levels, using the MLQ 5X short form was examined (Avolio & Bass, 2014).

As noted in Chapter 1, a quantitative study primarily involves cost-effective surveys, which are a means to discover specific organizational influences (Grohmann & Kauffeld, 2013). As noted in Chapter 2, leadership characteristics and educational levels are essential to senior-level fire service personnel in the United States (Clark, 2015). Experience has shown that earning an academic degree has become a need in the businesslike setting (Ditch, 2012). The United States fire service is no different because the emergency services industry exists within a businesslike setting (Clark, 2015). Leadership characteristics are critical in the United States fire service and a necessary item in advancing the profession to become more dynamic and efficient (Fox, 2009; Van Wart, 2014).

Chapter 3 included a clarification of researchers’ use of the MLQ 5X short form as a leadership survey instrument used to evaluate three different leadership styles: transformational, transactional, and passive-avoidant (Bass, 2013). Through the MLQ 5X short form, individuals can measure and visualize themselves in specific leadership behaviors (Avolio & Bass, 2014). The MLQ 5X short form is the tool researcher’s use often to measure transactional and transformational leadership. Developed by Bass (2009), the survey tool has changed over 30 years based from various studies in the public and private sectors.

Chapter 4 contained a discussion of the collected data and statistical analysis. Chapter 4 included a summary of the survey information, an explanation of the data collected, and the statistical analysis of the data from the survey. Chapter 4 also included
research details to improve the clarity and readability of the findings, which supported that the transformational leadership characteristic is prevalent among senior-level fire service personnel.

The result of Research Question 1 concludes that a correlation exists between leadership characteristics of senior-level personnel and the organizational culture in the United States fire service. The result of Research Question 2 identified that there is no correlation between the level of education of senior-level personnel and the organizational culture in the United States fire service. Among the senior-level NFA/EFO Program students who took part, 91.6% had earned a bachelor’s degree and 48.4% strongly stressed gaining a graduate degree. The summary of the research findings and the conclusions made based from the data analysis and findings follow.

**Summary of Findings and Conclusion**

**Findings.** To reach a suitable sample size based on a G*Power analysis, the study population was sent via email to 1,000 NFA/EFO senior-level students employed throughout the United States. At least 278 surveys were necessary to earn a 95% confidence level with a margin of error of 5%. This study obtained 465 completed surveys, demonstrating a 3.3% margin of error. The study included an Internet-based survey conducted through SurveyMonkey, which the participants completed and enabled measuring the research variables. The researcher added one question regarding educational levels to the MLQ 5X short form used in this study (Avolio & Bass, 2014).

**Research Question 1 and Hypotheses.** Does a significant correlation exist between leadership characteristics of senior-level personnel and the U. S. fire service organizational culture? Based on this research, rejected is the null hypothesis.
Transformational leadership characteristics were prevalent among senior-level fire service personnel in the United States.

Results of this study indicated that transformational leadership characteristics were prevalent among senior-level fire service personnel in the United States, which supported Hypothesis 1. Transformational leadership characteristics included 20 of the 36 total survey instrument items. Transformational leadership variables included idealized influence (attributed), idealized influence (behavior), inspirational motivation, intellectual stimulation, and individual consideration. The NFA/EFO students graded similar to the MLQ 5X short form model for idealized influence (attributed) and idealized influence (behavior), significantly higher for inspirational motivation, nonsignificant for intellectual stimulation, and slightly lower for individual consideration (Avolio & Bass, 2014).

The leadership outcome variables within the survey included extra effort, effectiveness, and satisfaction with leadership. Senior-level fire service personnel’s willingness to exert extra effort reflected as a leader’s ability to challenge others to do more than expected (Avolio & Bass, 2014). With a mean score of 2.87 (SD = .58), idealized influence (attributed) emerged as significantly higher than the MLQ 5X short form sample. This shows senior-level fire service personnel were willing to use higher levels of transformational leadership characteristics that subordinates look for in their leader.

Effectiveness refers to the senior-level fire service personnel’s views of leader effectiveness in meeting others’ job-related needs, meeting organizational needs, and leading groups. With a mean score of 3.25 (SD = .45), idealized influence (behavior)
emerged as significantly higher than the MLQ 5X short form sample (Avolio & Bass, 2014). Satisfaction refers to satisfaction with other leaders and use of satisfactory leadership methods to manage other employees. A mean score of 3.19 ($SD = .50$) for inspirational motivation displayed the senior-level fire service personnel were more certain than the MLQ 5X short form sample (Avolio & Bass, 2014).

Participants’ responses to survey instrument questions also concerned transactional leadership and passive-avoidant leadership. The leadership total scores from the MLQ 5X short form showed that transformational characteristics, with a mean score of 3.05 ($SD = .41$), were dominant over the other two leadership characteristics (Avolio & Bass, 2014). Leadership characteristics as central elements for the United States fire service to advance as a profession and become more efficient (Fox, 2009 & Van Wart, 2014).

Hypothesis 1, 11 of the 15 MLQ 5X short form scores were significantly different between the current sample of fire executives, and the Avolio and Bass (2014) sample. The largest difference in increased frequency occurred in idealized influence behavior ($M = +0.14$). As the idealized influence behavior characteristic translates to representing a leader’s ethical and moral standards, this statistic represented a positive finding in the leadership caliber of the target population of this study. The statistic benefit to the United States fire service by identifying a leadership characteristic needed to fulfill the roles of senior-level U.S. fire service personnel.

Senior-level fire service personnel used the passive-avoidant leadership characteristic ($M = -0.14$) least frequently, which showed that passive-avoidant leaders do not act as a catalyst for change are reactive, rather than proactive. Transformational
leaders perform positive change and growth. The survey had 465 completed responses. The $M = -0.14$ showed agreement with Moynihan et al.’s (2012) conclusion from previous research that transformational leadership was the effective leadership characteristic in circumstances.

**Research Question 2 and Hypotheses.** Does a significant correlation exist between the level of education of senior-level personnel and the United States fire service organizational culture? Research suggested that senior-level fire service personnel who were participants of the NFA/EFO Program had a bachelor’s degree (91.6%) or placed a strong emphasis in earning a graduate degree (48.4%). By contrast, 14.9% of Americans had a bachelor’s degree and 7.3% had some graduate degree in 2014 (U.S. Census, 2014). This study illustrated that senior-level fire personnel had higher levels of education than typical adults in the United States did. No respondents had only a high school diploma or less, 3 respondents had some hours of college education, 36 respondents had an associate’s degree, 201 respondents had a bachelor’s degree, and 225 respondents had a graduate degree.

The statement of findings for Research Question 2 was that no correlation between the level of education of senior-level personnel and the organizational culture in the United States fire service. This finding supported H2a. Senior-level fire services personnel have higher levels of education overall than the general U.S. population (U.S. Census, 2014). This also determined a need still exists for higher levels of education among fire services personnel. The significance of this finding fits within and continues to indicate the improvements that senior-level United States fire service personnel require to succeed to advance the creditability of the fire and emergency services culture.
Existing educational and leadership theories excluded the role of United States fire service leaders in managing information and knowledge despite their importance to the organization.

**Conclusion.** The researcher built the conceptual framework for this study around the likelihood that transformational leadership is the prevailing leadership characteristic for senior-level United States fire service personnel. Compatible with this study’s finding that both likelihoods are true is the secondary finding that no level of education is prevalent among senior-level United States fire service personnel. Because transformational leaders influence followers by advancing their goals beyond their self-interest, aiming for a higher degree of formal education is equal to the knowledge and skills necessary to be an effective transformational leader. The researcher explained benefit to the United States fire service by identifying the educational levels needed to fulfill the roles of senior-level United States fire services personnel.

The United States fire service has a long history of identifying the common leadership characteristics and education level needs for senior-level fire service personnel. The United States fire service is no longer an isolated profession in which personnel nurture its unique culture without outside influences (Carter, 2015). Formal education is one-way that an outside influence may positively affect the culture. Leaders should understand what factors influence developing higher education to the United States fire service profession (Smeby, 2013). NFA/EFO senior-level fire service personnel do not have a prevalent educational level. The need to aim for advanced education only adds to the scientific body of knowledge available to aid in such an understanding.
Implications

The results of this study serve as added information for the existing scientific body of knowledge regarding the needs necessary to advance the United States fire service profession. The findings included future research efforts and fills gaps in the existing knowledge base. Transformational leadership characteristics are necessary for advancing the fire service as a profession, thus mastering transformational characteristic.

The theoretical foundation of this study, presented in Chapter 2, was the full range leadership model and theory (Bass, 1990), which indicates transformational leadership is the efficient model. The findings included that the transformational characteristic was the prevalent leadership characteristic among the population surveyed. A strong leadership tendency exists toward extra effort, effectiveness, and satisfaction in the workplace. A correlation exist between leadership characteristics of senior-level personnel and the U. S. fire service organizational culture. This conclusion assists the continued application of the transformational leadership model among senior-level fire service personnel to advance the fire service profession.

The methodology and research design strengthened the findings, conclusions, and implications drawn from this study. The use of a nonexperimental design, a targeted population, self-administered survey delivered electronically, and anonymity all combined to promote results. The MLQ 5X short form questionnaire served as a relevant, proven base of comparison (Avolio & Bass, 2014). The researcher analyzed the descriptive statistics using SPSS Version 22, as well as G*Power 3.1, to gain the reliable data achievable for the study. The study’s weakness was the NFA/EFO Program survey participants. Responding to each survey question honestly, and from a senior-level
position is important in gaining clarity and intelligent information for the result to be credible.

**Theoretical implications.** The theoretical foundation was the full range of leadership model and theory (Bass, 1990). In this model, Bass (1990) proposed that transformational leadership is the effective leadership style. Transformational leaders differ from transactional leaders by developing leadership characteristic traits from lower to higher levels of maturity (Bass, 2014).

Transformational leadership is a leadership approach that causes a change in individuals and social systems (Avolio & Yammarino, 2013). Transforming leadership is a process, which leaders and followers help one another to advance to a higher level (Burns, 1978). Transformational leadership is a greater order of leadership than transactional leadership along a spectrum and not mutually exclusive (Antonakis et al., 2011). This idea included transactional leadership as part of transformational leadership and supported presents transformational leadership traits in primarily transactional leaders (Antonakis et al., 2011). Transformational leadership involves influencing organizational members, granting members with independence to complete the goal, allowing members to produce significant attitude change, and progressing toward the organization mission or goal (Yang et al., 2011).

Conclusions drawn from this study are credible. The primary strength of the study was its conceptual framework. The idea was that transformational leadership was the prevalent and efficient leadership model among senior-level fire service personnel. This indicated that the likelihood of senior-level fire service personnel had gained and valued higher levels of formal education.
The secondary strength of the study was the quantitative methodology and
descriptive design. The study included objective, credible, time-tested instruments for
research, data collection, data analysis, and data interpretation: SurveyMonkey, the Mind
Garden format, the MLQ 5X short form, and G*Power 3.1. A quantitative methodology
was suitable for managing the survey to the population and calculating the information
gathered. The study did not involve collecting any specific demographic data from
NFA/EFO Program students. Demographic information came from the National Fire
Protection Association’s annual *US Fire Department Profile* report (Haynes & Stein,
2014). A possible weakness in the data collection was the assumption that all survey
respondents answered every question honestly.

The credibility of the conclusions of this study is consistent with the credibility
contained in the literature review. The researcher reviewed the body of research in
relationship to the two independent variables of this study: leadership characteristics and
educational levels of senior-level fire services personnel in the United States. Earning
higher levels of education and understanding one’s leadership characteristics are
contributing factors to reducing the effects of disastrous events and result in lower
casualties and financial costs (Clark, 2015). Failing to earn a higher education and
understand one’s leadership characteristics would result in higher levels of incompetence
and higher expenses from catastrophes (Clark, 2015). This conclusion served to support
the need for this study.

Effective leadership provides higher quality and more efficient goods and services
(Tummers & Knies, 2013). Leaders in high-reliability organizational contexts such as
firefighting, often face the challenge of making sense of environments (Baran & Scott,
2010; Smeby, 2013). Fire service environments are dangerous, ambiguous, and rapidly changing. Intelligence, experience, education, and the correct leadership ethic and model serve as the basis for having the ability to make sense. Leaders in high-reliability organizational contexts are equal to the findings of this study as transformational leadership is the prevalent among senior-level fire services personnel and the need exist for higher education. The implication is that leaders who work in a better leadership model, highly educated, will deliver service that is more efficient and lead to fewer disastrous events, reduced costs, and lower casualties.

**Practical implications.** The researcher drew two practical implications from the findings of this study. The first is to continue to underline that senior-level fire service personnel who earn formal, higher education can influence the safety of the community that each fire department protects. The second is education may serve as a practical method of advancing the professionalism of the fire service culture and the quality of transformational leaders within the culture.

The researcher consulted the *US Fire Department Profile 2013* and learned that all-volunteer fire departments safeguard 16% of the American public (Haynes & Stein, 2014). Fire departments comprised of all-career firefighters safeguard 50% of the public and the largest single part of the population (Haynes & Stein, 2014). The practical implication is the need to ensure fire departments with effective, well-trained, and educated leaders, will inspire, coach, organize, and motivate their followers. A matching weakness is that only a small number of National Fire Academy recognized and accredited institutes of higher education offer fire science and leadership characteristic programs.
Educators promote fire science as an academic discipline at the collegiate level (Clark, 2015). Curriculum in higher educational institutions may not always agree with the career goals of senior-level individuals in the fire services profession. Creating a fire science and leadership characteristic degree curriculum has implication for becoming a practical method to advance the professionalism of the United States fire service culture. National Fire Academy leaders support the idea of increased educational requirements for each position on the organizational hierarchy (Geis, 2012). A conclusion from this study was there is no prevalent level of education among senior-level fire service personnel in the United States, although a positive appreciation for and a tendency toward advanced degrees does exist. The practical implication is that adding a suitable fire science and leadership characteristic degree programs in colleges and universities nationwide may advance the U. S. fire service profession.

Future implications. One of the results suggests academia to develop a fire science and leadership characteristic program nationwide. Currently, the foundations of fire science programs do not cover leadership characteristics. Earning an advanced degree should promote leadership knowledge and skill in any setting; however, gaining a specific advanced degree may be necessary to ensure greater effectiveness in United States fire service leadership.

An added implication for future research is the researcher did not link the target population in this study to a particular geographic setting. A demographic comparison between various major cities in the United States, urban and rural settings, and multiple regions, might increase the body of scientific knowledge. The question of whether senior-level fire services personnel would consistently yield evidence of transformational
leadership characteristics and not have a prevalent level of education in multiple settings might be worthy of a larger, more comprehensive population sampling. A gap in leadership research and the circumstances exist in which senior-level fire services personnel work (Baran & Scott, 2010). An in-depth study may close this gap.

As both are complicated in their idea and the practicalities of conducting research, the first recommendation over the second is preferred. The first recommendation may have more worth than the second recommendation. Each would add value to the fire services culture and add to the existing body of scientific knowledge. Leadership characteristics and education levels both shape the degree to which individuals accurately perceive and assess risk, which is a foundational requirement of senior-level fire service personnel (Bruegman, 2011). A university committee considering the design and implementation of a nationwide fire science and leadership characteristic education degree program could benefit from the evidence and guidance produced in this future study.

**Recommendations**

The results of this study included two conclusions: (a) transformational leadership was the prevalent leadership characteristic and (b) a prevalent level of education was absent. Senior-level fire service personnel who were participants of the NFA/EFO Program (91.6%) gained a bachelor’s degree, and 48.4% gained a graduate degree. The first conclusion directly correlates to recommend a comprehensive research of leadership characteristics in senior-level United States fire service personnel.

**Recommendations for future research.** The recommendation to research leadership characteristics in senior-level fire service personnel developed from the notion
the results could deepen to understand transformational leadership in the fire service culture because of varied and geographical settings. Inspiring all senior-level fire service personnel to gain higher levels of education would add value to the United States fire services culture and the existing body of scientific knowledge. The literature review and the study’s results indicated that transformational leadership is the prevalent leadership characteristic for senior-level fire service personnel. Higher levels of education in senior-level fire service positions are desirable. The first research recommendation would require additional research to determine the prevalent leadership characteristics and educational levels in law enforcement, and emergency management. Similar research in hospital and health care organizations, other governmental jurisdictions, and other types of organizations that contribute both directly and indirectly to emergency service efforts.

The second future research recommendation is to reproduce this study with a focus in several variables, including urban versus rural locations, formal supervisor versus non-supervisor acting as incident commander, and paid professional firefighters versus volunteer firefighters as referred to leadership style and team performance. The third future research recommendation would be to consider using other research methodologies, as using multiple methods in researching leadership helps to reduce methodological errors and increases the effectiveness and the internal and external validity of the study. Such methods should include more quantitative as well as qualitative and descriptive methods, including observations, interviews, and intensive case studies.

The final recommendation for future research is to develop and carry out fire science and leadership characteristic degree programs in higher educational institutions
nationwide. This fourth future research recommendation should also include other relevant emergency service organizations such as law enforcement, emergency management and hospital and health care organizations. The benefits of higher education are an innate part of a profession (Clark, 2015). Senior state, county, and local government officials should provide a clear understanding of the roles and responsibilities each emergency service leader. The weakness is only a few NFA recognized and accredited institutes offer fire science and leadership characteristic programs. The same recognition and accreditation process is necessary to institutes of higher education for law enforcement and emergency management.

Decreasing the shortage of higher education institutions will add to the accumulation of knowledge, which is a primary purpose of research. This principal recommendation serves to aid in the practical next steps necessary to achieve the result of offering fire science and leadership characteristic degree programs nationwide. The recommendation to study the likelihood of fulfilling a fire science and leadership characteristic program aligns with the study significance. Higher education is necessary for the U.S. fire service, as its members will no longer nurture its unique culture as an isolated profession without outside influences (Clark, 2015).

**Recommendations for practice.** Of the NFA/EFO Program participants, 91% gained a bachelor’s degree, and 48.4% tried to earn a graduate degree. The first conclusion directly correlated to the recommendation for added and more comprehensive research concerning leadership characteristics among senior-level United States fire service personnel. The second conclusion directly correlated to the recommendation for research into the designing a fire science and leadership characteristics degree program in
higher education institutions. The first recommendation for future practice is for collegiate and university level educators who teach senior-level fire service personnel in the academic setting. The curricula in higher education institutes might not interconnect with the individuals’ career goals. There is no significant correlation between the level of education of senior-level personnel and the United States fire service organizational culture, although there is a positive movement toward higher education. Educators who read this study and understand the role of education in transformational fire service leadership could heighten the relevancy of higher education to fire service professionals.

The second recommendation is for city and county managers to interact with senior-level fire services personnel. One item of the study’s significance was to decide whether the transformational leadership characteristic is the prevalent leadership characteristic in the United States fire service. This study included insights into the nature and need of senior-level fire service personnel being able to think critically in management meetings with attorneys, city and county managers, and human resource directors. A greater understanding by managers of the transformational leadership characteristic prevalent among senior-level fire service personnel might foster a team effort approach to strategic planning and problem solving and lead to change.

Since the MLQ 5X short form identified a broad range of leadership characteristics and levels of education, leaders of both academic and governmental entities would gain insight into how it relates to the fire service culture. Instructors should add value to the U.S. fire service culture by helping to fill the need for advanced education. City and county government personnel can successfully interact with senior-level fire service personnel and tap into their leadership strengths with favorable change.
Concluding Remarks

The lives of United States citizens depend every day in the quality of performance of senior-level fire service personnel and followers. The value of this study illustrates the need to advance our professional capabilities. Understanding the United States leadership characteristics and improving the need of higher education enhances to the existing body of scientific knowledge in the fire service culture. The transformational leadership model is desired and encouraged. The important and significant reason in this study is that senior-level United States fire officers who wish to lead organizations gain higher levels of education and instill transformational leadership characteristics.

Because lives depend on the caliber and competence of United States fire service personnel, fire service leadership should raise the bar of professionalism. Researchers have not used educational and leadership theories to address the role of fire service leaders in managing information and knowledge, despite the importance to the organization (Kahn, 2015). Fire service personnel continue to respond to challenges that will need changes in the task, and mission (Kahn, 2015). This quantitative descriptive study heightens the understanding leadership and higher education among senior-level fire service personnel. United States fire service leaders need to look past the immediate challenges and strategically plan to position the organization for the future.
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Appendix A

Multifactor Leadership Questionnaire Leader Form (5X short form)

For use by Bernard W. Becker, III only. Received from Mind Garden, Inc. on April 8, 2015

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
MLQ   Multifactor Leadership Questionnaire™

Leader Form (5X short form)

My Name: ____________________________ Date: __________________
Organization ID #: __________________ Leader ID #: ____________

This questionnaire is to describe your leadership style as you perceive it. Please 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.

Forty-five descriptive statements are listed on the following pages. Judge how frequently each statement fits you. The word “others” may mean your peers, clients, direct reports, supervisors, and/or all of these individuals.

Use the following rating scale:

<table>
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<tr>
<th>Not at all</th>
<th>Once in a while</th>
<th>Sometimes</th>
<th>Fairly often</th>
<th>Frequently, if not always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

I provide others with assistance in exchange for their efforts
I re-examine critical assumptions to question whether they are appropriate
I fail to interfere until problems become serious
I focus attention on irregularities, mistakes, exceptions, and deviations from standards
I avoid getting involved when important issues arise

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Published by Mind Garden, Inc., www.mindgarden.com
Appendix B

Permission to Use SurveyMonkey Research Platform

Use of SurveyMonkey Audience for Academic and Research Purposes is Permitted

SurveyMonkey Audience is a service provided by SurveyMonkey which helps customers reach a targeted audience for their surveys. We recruit survey takers from the millions of people who answer SurveyMonkey surveys each month to help customers target the people they need for their survey projects. Recruitment of potential survey takers occurs through our member site, SurveyMonkey Contribute (https://contribute.surveymonkey.com).

This note is to confirm that SurveyMonkey Audience is commonly used by students, researchers and academics to collect data for their research.

SurveyMonkey Audience will run a customer’s survey so long as it meets our survey length and other compliance requirements, and we are able to fulfill the customer’s targeting requirements at the time of launch. Please refer to http://help.surveymonkey.com/app/answers/detail/a_id/5809 for more information about these requirements.
Appendix C

Institutional Review Board Consent Form

Date: September 15, 2015

Dear National Fire Academy Executive Fire Officer Student

Greetings,

I am a doctoral student at Columbia Southern University. I am conducting a quantitative descriptive leadership study to exam the leadership characteristics, and educational levels based on the findings of 1,000 senior-level students of the Department of Homeland Security, United States Fire Administration, and National Fire Academy Executive Fire Officer program.

I am requesting your participation, which will involve participating in a short, online (15 minute) survey. You have the right to refuse to answer any question and to stop the interview at any time. Your participation is voluntary. You can choose not to participate, or if you do participate, you can withdraw from the study at any time without penalty. Regardless on not participating, your decision will not affect your student or graduate status as a National Fire Academy Executive Fire Officer. However, the benefits of participating will provide useful career insight for yourself and others in your organization.

Your responses will be anonymous and all information will be kept confidential. The results of this study may be used in reports, publications, or presentations, but your name will not be used, since we had not gathered this information. If you have any questions regarding this research, please contact Bernard W. Becker, III at 216-875-9860. If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can send an email to dba@columbiasouthern.edu and someone will contact you.

Sincerely,

Bernard W. Becker, III; DBA(c), MS, EFO, CFO, MIFirE

(E-mail) b.becker64@csuohio.edu

(Office) 216-875-9860
### Appendix D

**U. S. Census, 2014**

Table 3. Detailed Years of School Completed by People 25 Years and Over by Sex, Age Groups, Race and Hispanic Origin: 2014

<table>
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#### Elementary or High school, no diploma

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<th></th>
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<td>Less than 1 year, no diploma</td>
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<td>7th-8th grade, no diploma</td>
<td>4,171</td>
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<td>9th grade, no diploma</td>
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<td>10th grade, no diploma</td>
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<td>11th grade, no diploma</td>
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<td>12th grade, no diploma</td>
<td>2,667</td>
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#### Elementary or High school, GED

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<tr>
<td>1st-4th grade, GED</td>
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<tr>
<td>5th-6th grade, GED</td>
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<td>-</td>
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<td>7th-8th grade, GED</td>
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<td>12th grade, GED</td>
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<tr>
<td>High school diploma</td>
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#### College, no degree

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<td>Two years of college, no degree</td>
<td>13,029</td>
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<td>Three years of college, no degree</td>
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<tr>
<td>Four or more years of college, no degree</td>
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#### Associate's degree, vocational

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<tbody>
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<td>Less than 1 year college, vocational/associates</td>
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#### Associate's degree, academic

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<tbody>
<tr>
<td>Less than 1 year college, academic/associates</td>
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<td>One year of college, academic/associates</td>
<td>676</td>
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<td>Two years of college, academic/associates</td>
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<td>Three years of college, academic/associates</td>
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<td>Four or more years of college, academic/associates</td>
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<td>Bachelors degree only</td>
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#### Graduate school, no master's degree

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<td>Less than 1 year of graduate school, no master's degree</td>
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<td>One or more years of graduate school, no master's degree</td>
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#### Master's degree programs

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<td>Master's degree 1 year program</td>
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<td>Master's degree 2 years program</td>
<td>11,443</td>
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<td>Master's degree 3 or more years program</td>
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<td>Professional degree</td>
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</tr>
<tr>
<td>Doctorate degree</td>
<td>3,703</td>
<td>1.6</td>
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</table>
Appendix E

Permission to use the National Professional Development Model

RE: Requesting permission

McCabe, Michael D <Michael.McCabe2@fema.dhs.gov>
Wed, 2/9/2016 12:39 PM
In: Bernard W Becker <b.becker64@csuohio.edu>

Hello Bernie,

First, congratulations on your work. I am sure it will be an important document for our fire service.
The National Professional Development model and matrix are public documents and as such you may certainly use them in your research. Please let me know if I may of further service.

Mike

From: Bernard W Becker [mailto:b.becker64@csuohio.edu]
Sent: Wednesday, February 03, 2016 13:57 AM
To: McCabe, Michael D <Michael.McCabe2@fema.dhs.gov>
Subject: Requesting permission
Importance: High

Good morning Mr. McCabe,

I am a doctoral candidate, completing my Doctoral of Business Administration dissertation on “Leadership Characteristics and Educational Levels Prevalent Among Senior-Level Fire Service Personnel in the United States.” I came across the “National Professional Development Model Matrix”, and am requesting permission to utilize this illustration in my dissertation. Appropriate credits will be properly noted.

Thank you for your time.

Bernard W. Becker, III, DBA(c), MS, CFO, EFO, MIFireE
Director, Center for Emergency Preparedness
Professor, Public Safety Management Program
Cleveland State University
Levin College of Urban Affairs, UR 124
1717 Euclid Avenue
Cleveland, Ohio 44115
Appendix F

Permission to use the U. S. Fire Department Profile, 2013

Dear Mr. Becker,

This will respond to your email requesting permission to use NFPA® material.

As I understand your request, you would like permission to use the two US Fire Department profile illustrations from the NFPA report titled "US Fire Department Profile, 2013" by Hytton J. G. Haynes and Gary P. Stein in your dissertation.

Having reviewed your request, we are happy to grant you permission to use the above-referenced illustrations from that report. You may also wish to include the link: http://www.nfpa.org/research/reports-and-studies/fire-service/administrative/us-fire-department-profile to access the report.

Please use the following credit statement appropriately:

"Reprinted with permission from NFPA’s report, "US Fire Department Profile" by Hytton J. G. Haynes, Gary P. Stein, Copyright © 2014, National Fire Protection Association."

If you have any questions concerning this permission, please feel free to contact me.

Sincerely,

[Signature]

Dennis Barry
Secretary of the Corporation &
Director of Licensing.
Appendix G

Collaborative Institutional Training Initiative

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COURSEWORK REQUIREMENTS REPORT

*NOTE: Score of 80 indicates minimum passing score. See the CITI Program for more information on acceptable coursework.

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<th>bernard becker (U. 480189)</th>
</tr>
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<tr>
<td>Email</td>
<td>ocdcbecker@yahoocom</td>
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<tr>
<td>Institution Name</td>
<td>Collaborative Institutional Training Initiative (CITI) Program (U. 2520)</td>
</tr>
<tr>
<td>Inclusion level</td>
<td>IDA</td>
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| Report ID | 1571 (81) |
| Completion Date | 04/24/2016 |
| Expiration Date  | 04/23/2018 |
| Minimum Passing | 80         |
| Reported Score  | 89          |

<table>
<thead>
<tr>
<th>REQUIRED AND ELECTIVE MODULES ONLY</th>
<th>DATE COMPLETED</th>
<th>SCORE</th>
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<tbody>
<tr>
<td>Using Available Resources (RCR-Bank) (ID 13301)</td>
<td>04/24/16</td>
<td>86 (83%)</td>
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<tr>
<td>Research and Publishing Ethics (RCR-Bank) (ID 13666)</td>
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<td>Export Control and National Security (RCR) (ID 944713)</td>
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</table>

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program and an enrolling institution identified above or have been a paid independent learner.

CITI Program
Email: citi-training@umiami.edu
Phone: 305-284-3743
Web: http://www.citi.org
Appendix G

Collaborative Institutional Training Initiative (Continued)

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COURSEWORK TRANSCRIPT REPORT

**NOTE: Scores on the Transcript Report reflect the states and contents of the course as of the date shown. See schedules for details. See separate requirements & reports for required competencies & core courses.**

- **Name:**
  - **Education:**
  - **Email:**
  - **Institution:**
  - **Institution Location:**
  - **Phone:**

- **Curriculum Group:**
  - **Course Learner:**
  - **Stage:**

- **Report ID:**
- **Report Date:**
- **CertiScore:**

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<th>SCORE</th>
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<tr>
<td>Research Practices (ID: 0182) (ID: 0136)</td>
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<tr>
<td>Research Ethics (ID: 0182) (ID: 0138)</td>
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<td>Data Management (ID: 0182) (ID: 0139)</td>
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<tr>
<td>Building (ID: 0182) (ID: 0140)</td>
<td>04/21/15</td>
<td>55 (100%)</td>
</tr>
</tbody>
</table>

For this report to be valid, the learner identified above must have had a valid affiliation with the CITI Program at the institution identified above or as required by the independent learner.

CITI Program
- **Email:**
- **Phone:**
- **Web:**