THE EFFECT OF SATISFYING THE REQUIREMENTS FOR FIRE OFFICER SCHOOL ON LEADERSHIP SELF-EFFICACY AMONG FIRE SERVICE OFFICERS: A QUASI-EXPERIMENTAL, NONEQUIVALENT CONTROL GROUPS STUDY

by

Thomas James Grady III

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

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APPROVED BY:

Timothy R. Nelson, Ed.D., Committee Chair

Philip Alsup, Ed.D., Committee Member

Abstract

The purpose of this quasi-experimental, nonequivalent control groups study was to determine if a statistically significant difference exists in fire officer leadership self-efficacy of officers who have attended fire officer training school and those who have not attended fire officer school. This study utilized self-efficacy theory, leadership self-efficacy theory, social cognitive theory, and adult learning theory to support explanation of such standards. This quasi-experimental, nonequivalent control groups study employed the Bobbio and Manganelli's Leadership Self-Efficacy Scale (LSES) to assess the degree of fire officer leadership self-efficacy. Within testing sites, there was a treatment group (Training) and a control group (No Training). Sampling methods included convenience and voluntary response sampling of fire officers from two different fire departments. The number of participants sampled was 100. The utilized statistic was the independent samples *t* test. An independent samples *t* test was used to test the null hypothesis: is there a difference among the leadership self-efficacy scores of participants who attended fire officer school and those who did not attend fire officer school? The findings state that there is no significant difference between fire officer leadership self-efficacy of fire officers who have attended fire officer training school and those who have not attended fire officer school $t(99)=0.11$, $p < 0.05$. Upon completion of this study, it was determined that future empirical research is recommended to include a greater number of participants, a more diverse set of participants, of more fire departments, and across a vaster area.

Keywords: quasi-experimental, education, fire, officer, leadership self-efficacy, training, quantitative

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Dedication

This product of a long and enduring process is dedicated to many, as many have contributed to its success. Without any of you, I would not have been able to accomplish such a monumental commission. I have felt divinely directed throughout this journey to be where I am today. It has been a long journey, and I have to thank many who have taken the journey with me, alongside me, have pushed me, and have carried me on shoulders. All of you have greatly inspired me, I wish to express my feelings of your instrumentality, and I love you all!

To God, my God, I owe everything. You have given me strength when I had no strength. You have given me insight, when I failed to 'see.' You have given me time, when I seemed to be out of time. You have protected me from outside dangers and distractions when there were many. You have given me rest, when I wasn't immediately working toward this goal.

To my wife, Rachel, I owe so much. Without you, this was not possible. You have given me support in so many ways. These include love, trust, kindness, availability, and motivation, just to name a few. You have shared your love, the greatest of these. You have trusted me in this journey to succeed and to provide benefit. You have taken much upon your shoulders so I can have time and rest. You, along with the children, are my motivation! Your 100% commitment to me matches my 100% commitment to you. You are my soulmate, the love of my life, my companion, my very best friend, and I love you so, so much! Let us enjoy and celebrate our tremendous accomplishment together. Are you ready for the next step?

And to my children: Grace, Hope, Christian, and Faith, I owe so much. To you, I wanted to provide an example of how to succeed, how to tackle such a tall task, as well as show that an elephant can be eaten, even if it is just one bite at a time. Please understand what Paul divinely wrote in Philippians 4:13 – you too can do anything through Christ who strengthens you. Success

and progression can be found through the grace of God, biological capacity, and good old fashion hard work. Biological capacity without hard work goes nowhere. Advanced degrees of hard work, grit, resiliency, and perseverance can overcome many obstacles and barriers. Remember, it is not about how fast you can run, but how well you can overcome the many hurdles in life. I hope that I have inspired you to strive for excellence in work and in play. If you want it bad enough, you will get it! You just have to find the *how*. Never get outworked! Effort is the one thing that you can always devote to even any potential inequities in the battleground. Find the loves in your life and pursue them with an unyielding desire and determination. Remember – Grady's never quit! Also remember – it is not about how hard you can hit, but about how hard you can get hit, and keep moving forward.

Be life-long learners, be inquisitive, and ask the question – why?

To my mother and father, through whom I have learned so much. To my late father – thanks for your encouragement! You always said that I would discover accomplishment. To my mother, what a great model of grit, perseverance, and resilience! You have paved the road for me and have planted a seed of fortitude. You have provided the grindstone and showed me how to put my nose to it! To my two sisters, rest of the family, and friends – Thank you so much for your support!

To my chair, methodologist, professors, and everybody else that has assisted me throughout this enduring and rewarding journey – thank you!

To all of my loved ones: thank you so much, and…

WE DID IT!!!

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List of Abbreviations

Education Level (EL)

Emergency Medical Services (EMS)

Fire Department (FD)

Fire Officers – Training (FO-T)

Fire Officers – No Training (FO-NT)

General Self-Efficacy Scale (GSES)

Hazardous Materials (HAZMAT)

Houston Fire Department (HFD)

Hypothesis (H_0)

Institutional Review Board (IRB)

International Association of Fire Fighters (IAFF)

Leadership Self-Efficacy Scale (LSES)

Michigan Professional Fire Fighters Union (MPFFU)

National Institute for Occupational Safety and Health (NIOSH)

Sterling Heights Fire Department (SHFD)

United States Fire Administration (USFA)

CHAPTER ONE: INTRODUCTION

Overview

The purpose of this research study was to determine if a statistically significant difference exists in fire officer leadership self-efficacy of officers who have attended fire officer training school and those who have not attended fire officer school. This chapter will investigate the background, history, social, and theoretical associations regarding the fire service, as well as the problem statement, purpose statement, significance of the study, research question, and definitions.

Background

When Ben Franklin started the fire service back in 1736 (Majerowicz, 2018), he probably never believed that it would evolve to become such a complex entity. Franklin's initial thought and desire was to develop an extinguishment division that was solely responsible for passing buckets of water from person to person to eventually be dumped onto burning materials called the bucket brigade (Decremer, 2018). It has now grown to exponential heights and is an art, as well as an intricate science (Buttenschon, 2016). The fire industry has demonstrated substantial developments in agendas, safety, and structure over that last 20 years (Simcock, 2020). Some other areas that have developed since Franklin include paramedicine, technical rescue, hazardous materials handling, high level of training, and such an intricate hierarchical leadership and practice focusing on incident command structure. Being that the industry has evolved to encompass much more than traditional extinguishment (National Institute for Occupational Safety and Health, 2016), it is crucial to determine if leadership training has also evolved.

Historical Overview

Early research on leadership focused on the actual leaders themselves, virtually eliminating all other potential variables (Tannenbaum & Massarik, 1957). Since then, Burns (1978) defined leadership as a developmental human process that originated from the meeting of human needs. Bennis and Nanus (1985) detailed the core elements of leadership to include: maintaining organizational progression, translation of goals into practice, strategic planning, and ensuring supportive actions. More recently, Robbins (2000) believed leadership is defined as the ability to influence the members of an organization to achieve a vision or goal.

September 11th, 2001 changed how the fire service operates. Effective leadership is more important now than ever before since the events of 2001 (Buttenschon, 2016). Since then, the fire service has been challenged in many ways. Leadership has changed in many ways. Prognostication of today's leadership practices from 10 years ago is as inaccurate as it would be about 10 years from now (Sowcik & Amaladas, 2015). Per capita, the United States is one of the highest ranked countries of death rate to fire ratio (Buttenschon, 2016). There were 1,557,500 reported fires that resulted in 3,430 deaths, 17,675 injuries, and $14.6 billion in property damage in 2007 (Andrews & Brewer, 2010). One way to improve this statistic is to improve fire leadership. In order to improve fire leadership, fire officer training must be a priority.

Ever since the infamous events of terrorism that occurred September 11th, 2001, where 343 firefighters paid the ultimate sacrifice, the fire service has been challenged in many ways (Smith et al., 2019). There have been many more incidents since that have posed their own unique challenges, like the Boston Marathon bombing, Paris attacks, and many active shootings (LaLone et al., 2020; Lesaffre et al., 2017; McIntire et al., 2017). One challenging aspect is that of leadership and how to respond to such infamy. Effective leadership is more important now

than ever before since the events of 2001 (Buttenschon, 2016), and leadership preparation begins with education.

Society-at-Large

In the fire service, leadership plays an immense role in the functioning and success of the organizations (Fiaz et al., 2017). An organization's success is directly related to its leaders' beliefs in their own capabilities to execute the necessary actions to achieve the desired results (Bandura, 1997). When fire crews are confronted with challenging circumstances, everyone reverts to the leaders. If an undesirable or unacceptable event occurs, it is the members in leadership that are questioned and held responsible. The definition of leadership is ever evolving (Miller, 2015), but it may be described as the recruitment of others and inspiration toward a shared vision (Kouzes & Posner, 2017).

Much like many other industries, the fire service is quite dynamic. One tactic to ensure that a group of firefighters maximize their effectiveness is through strong leadership (Buttenschon, 2016). Over the last couple of centuries, the fire service mission has been rooted in blue collar work, and that has not changed much over the years (Martin, 2020); however, the invention of technologies and progression of standards has led to many changes in fire strategies and tactics (Angle et al., 2019). Being that what dictates fire service engagements has been so dynamic, fire education has had to maintain the provision of necessary support modalities (Angle et al., 2019). It is up to fire leadership to advance and develop their respective fire departments to best combat such potentially challenging encounters of changing mission requirements, and responsibility resides with fire officer training to fully prepare the fire leaders of tomorrow (Griffith & Roberts, 2020).

Allio (2015) believed that it is the adoption and implementation of efficient strategies that best support organizational success. Strategies are one aspect that are learned from fire officer school. Given that the fire service is profoundly potentially dangerous, the importance of improving firefighting skillsets can be overdone (National Institute for Occupational Safety and Health, 2016). Effective training is beneficial in many ways, including enabling firefighters to learn and practice strategies and tactics, improving understanding toward performing essential tasks, ensuring the proper use of equipment, and fostering teamwork (National Institute for Occupational Safety and Health, 2016). Some such varieties of strategies include (a) fire ground tactics; (b) human resources management; (c) ethical response; (d) community outreach and education; (e) communications; (f) risk management; (g) health, safety, and wellbeing; (h) personnel management; (i) disaster mitigation; (j) strategic development, practice, and actualization; (k) training; physical fitness; and (l) protocol understanding (NFPA, 2013). According to Ash and Hodge (2016), there are five critical elements that must be included in leadership practice that includes focus on direction, building a powerful organization, ensuring student-focused vision and action, giving life to data, and leading learning. If selected officer training does not support these elements, it may be time to seek other means of education.

Theoretical Background

The theoretical framework surrounding leadership in emergency services involves theories which typically drive much of adult learning. These include self-efficacy theory (Bandura, 1977), social cognitive theory (Bandura, 1986), and adult learning theory (Knowles et al., 2015). These three theories were utilized to assist in the understanding of leadership and how leadership develops in individuals. All are vital in providing understanding of the psychology of learning and are just a couple tools to explain how leadership advances. These theories are

closely related, but also very different in contexts. Self-efficacy theory details how self-efficacy relates to the production of performance attainments (Bandura, 1977). Adult learning theory concerns the ways adults learn through traditional didactic means, and social cognitive theory (Bandura, 1986) explains how adults learn through the observations of others. The central component of social cognitive theory is self-efficacy (Dixon et al., 2019). Social cognitive theory (Bandura, 1986) states that self-efficacy leads to competency (Bandura, 1971). The focus of social cognitive theory concentrates on how human behavior and development are affected by cognitive processes.

One can learn what to do from others who practice successful exercises, but it may be just as effective to learn what not to do from others' mistakes (Viscuso, 2013). Learning from others contributes to learning, development, and confidence. When leaders are competent, subordinates are usually are confident. When leaders reach confident levels, they tend to find greater success. Leaders are at their best when they believe in their work (Alkadi, 2020).

One of the most critical steps is to determine the levels of leadership self-efficacy for each leader, find what can promote leadership self-efficacy, to develop a progression plan, deploy such plan, and reassess the plan for continued effectiveness. One of the foci in industry should be to develop successful leaders that are confident in their work. In regard to educational institutions, unfortunately, leaders have to prepare for the potential of school shootings. Leaders face newfound challenges in potential school shootings and massacres that was not as prominent just a decade ago. Educational leaders must develop strategic plans in case their institution must endure such infamy. Leaders must train in order to support operational response in the form of quick decision-making, managing resources, and assisting all individuals in such times (Brown,

2018). Having good rapport with the surrounding community as resources is critical to safety management (Jannetta, 2019).

Leader self-efficacy is imperative to the success of the teachers and the students. One of the greatest challenges in leadership is to assist leaders into reaching a level of high self-efficacy. Social cognitive theory (Bandura, 1986) is the idea that humans learn through social means. It rationalizes learning through experiencing outside stimuli, evaluating such processes, collecting ideas, forming opinions, and using found opinions to make decisions and influence the outside world (Bandura, 1971).

Bandura believes that the greater the level of preparation for a particular experience, the greater the level of self-efficacy (Bandura, 1997). Bandura stated that a person's environment is constantly influencing the individual's behavior, and self-efficacy is the most integral element of a person's collection of knowledge (Bandura, 1997). Also, a person's self-efficacy is an individual's beliefs (e.g., how they feel, think, and where their behavior can be explained through motivation) that they are capable of achieving certain goals (Bandura, 1997). Not only is self-efficacy the belief in oneself, but also the confidence that they are able to conquer presented challenges (Ghadiri et al., 2018).

Bandura (1977) stated that self-efficacy may be derived from four states that include performance accomplishments, experience, verbal persuasion, and physiological states. If any of these areas lack, it may be difficult for leadership self-efficacy to flourish. Because new fire officers do not have experience in fire leadership, leadership self-efficacy may not have a chance to develop. With this said, fire officer education plays an immense role in the development of leadership self-efficacy, thus early success of fire officers.

Consistent with adult learning theory (Knowles et al., 2015), adults take learning quite seriously and it is of great importance (Beder, 1989; Merriam, 1993). As adults mature, so do their respective motivations. Whereas children tend to have affinity toward what is fun, adults tend to take a more responsible direction. Another theory that has assisted in the understanding of self-efficacy is social cognitive theory (Bandura, 1986). Adult learning theory details that adults need to possess a sense of autonomy and need to develop academic agency over their learning in order to maximize their potentials (Knowles et al., 2015). Adult learning theory operates under five assumptions that support self-concept, adult learner experience, readiness to learn, orientation to learning, and the motivation to learn (Halpern & Tucker, 2015).

Not only may these thoroughly examined and well-established theories be used to explain anything that is psychologically comprehended, but they also may easily be referenced to support the essential ideologies referring to the development of leadership. Adult learning theory and social cognitive theory (Bandura, 1986) will assist in the illustration of leadership subtopics and assist in synthesizing findings to support such topics. One of the elements of adult learning theory is that learning is extremely important to adults (Beder, 1989; Merriam, 1993), and most leaders are adults.

From the public's perspective, fire officer training is of significant importance, as the decisions made by the ones in charge of rescuing citizens from danger or harm are influenced by such training (Schulte & Thielsch, 2019). This study seeks to determine if the current standard of officer training is sufficient enough to support fire officer leadership self-efficacy. In order to accomplish this task, this study will seek to determine if there is a significant difference in leadership self-efficacy of fire service leaders who attend officer school compared to those who do not attend. If it is not subjectively sufficient, or to a level leadership demands it to be, then

maybe leadership should seek other means of delivering such training imperative to the safety of their crews so they can best support the citizens.

Problem Statement

While there have been studies performed on specific military leadership training modalities and self-efficacy (Hudson, 2016; Meerits & Kivipõld, 2020; Myrseth et al., 2018), there is a paucity of literature of para-militaristic studies relating to the current standard of fire officer training. Military studies have determined a relationship between training and self-efficacy (Bergman et al., 2019). However, to date, literature of fire officer education related to self-efficacy is quite scarce.

Militaristic studies found that leadership has the potential to affect emotional intelligence, or awareness of the mindsets and outlooks of others, and that contributes to the development of much-needed skills (Shaaban, 2018). The fire service operates like a para-militaristic industry. Each department has ranks, and commanding officers issue orders to subordinates. In the police and fire industries, the most important element for any member to consider is safety (Malone, 2018). Safety leadership is the process of utilizing efforts to drive the safety value and supporting team success (Cooper, 2015). When leaders are confronted with various threats, how they respond is similar (Wei et al., 2016). As noted from Malone (2018), one of the main imperatives as a fire officer is to maintain safety amongst the crew members. Effective leadership is the fuel that directly influences team production (Carter, 2007). This concept is especially significant considering emergency services like the fire service (Carter, 2007). There is no doubt that firefighting is dangerous. There is a direct correlation between diminished leadership skills and an increase in danger to firefighters as well as the citizens in which they protect (Cote, 2003). Some of the potentially dangerous elements include rescuing endangered citizens, protect

citizens that are at risk, stabilizing the incident, slowing and stopping loss, fire control, and property conservation (Brunacini, 2002). The development of effective leaders who possess abilities to respond effectively in situations of crises is a precursor to safe and effective firefighting operations (Carter, 2007). The fire service structure is a purposefully designed and extremely specialized tool designed to mitigate a vast array of potential conditions of great personal danger and immediacy (Carter, 2007). When fire leaders are confronted with fire risks, their decision-making processes venture through a basic sequence of risk information collection, cognitive processing, to risk reduction (Liu & Jiao, 2018).

It is imperative to create an effective educational product that supports competent leadership. A contradiction exists between the profound demands of inexperienced fire officers' competencies and difficulty in developing proper characteristics in fire officer graduates (Bulgahov et al., 2019). New leaders must mitigate different issues than leaders of the past, and such issues require the utilization of progressive perspectives and strategies (Allio, 2015). There is a lack of research regarding a potential difference in leadership self-efficacy of fire service leaders who attend officer school compared to those who do not attend.

Purpose Statement

The purpose of this quasi-experimental, nonequivalent control groups study was to determine if a statistically significant difference exists in fire officer leadership self-efficacy of officers who have attended fire officer training school and those who have not attended fire officer school. This proposed study will employ a quasi-experimental, nonequivalent control groups design. The specific focus of self-efficacy in this study is leadership self-efficacy.

This study sought to provide robust discourse and in-depth investigation into the concept of leadership self-efficacy and leadership training. A gap in the literature was evident upon

investigation. The independent variable is the presence of fire officer leadership training and are titled present and not present. The dependent variables are the leadership self-efficacy scores from the population of Fire Officers and future Fire Officers from the Houston Fire Department (HFD) and Sterling Heights Fire Department (SHFD).

HFD services the fourth most populous city - about 2,325,502 residents over an area of 665 square miles with 105 fire stations (Houston, 2022). The HFD is the third largest fire department in the United States, was established in 1838 (Houston, 2022), employs professional firefighters, all of which protect an urban community. SHFD protects the fourth most populous city (suburban) in the state of Michigan. It serves about 135,000 residents over an area of about 36 square miles with five fire stations. SHFD employs professional firefighters.

This study included a treatment group (Training) as well as a control group (No Training). A control group was added as this strengthens the internal validity of this experiment (Gall et al., 2007, p. 32). Leadership self-efficacy of prospective fire officers will be represented through the LSES and produce scores that assess for leadership self-efficacy. Such scores are derived from the same scale utilized to measure for leadership self-efficacy.

Significance of the Study

This study addressed the gap in the understanding of leadership by taking what is known, assessing what is not known, curating the data, and finalizing the report. This study seeks to add to the existing literature while attempting to further bridge the gap of understanding. Previous similar studies (Johannessen, 2017; Penney, 2016, 2019; Sedlmeyer & Dwyer, 2018) have concentrated on leadership qualities and fire operation and administrative dynamics or wildland firefighting (Butler et al., 2017; Castellnou et al., 2019; Eriksen et al., 2016; Reimer & Eriksen, 2018); however, the gap in the literature is considered an opportunity to progress understanding.

The phenomenon of leadership deals with influential objectives to achieve organizational feats (Naseer et al., 2016). The development of current leadership training initiatives is questionable (Lacerenza et al., 2017). This study aims to advance the existing body of knowledge through theoretical delineation, the curation and presentation of research findings, and through academic discussion. This study is extremely significant to the advancement of leadership studies, and thus every other element in the fire service. Leadership is a dynamic phenomenon (Miller, 2015). Leaders' positive self- concept enables them to recognize the possible opportunities for growth, as well as to develop a positive self-concept (Ross, 2014).

The approach, structure, and operations are similar in many ways between the police and fire industries (Wenger et al., 1989). Superior levels of self-efficacy in leadership are desired by the administration and municipal leadership for both disciplines. Many research studies have found, examined, and detailed the importance of self-efficacy in police leadership (Chu & Abdulla, 2014; Chu et al., 2020; Kwak et al., 2018; Love & Singer, 1988; Taris et al., 2010).

As a result of this study, members of the fire service are able to possess an understanding if there a significant difference in leadership self-efficacy of fire service leaders who attend officer school compared to those who do not attend. Information from this study will provide insight for fire department leaders, educators, and administrators to best support fire leadership that subsequently best supports the citizens that they vow to serve and protect. Critical leadership education is needed by all members who enter into leadership positions. While this study was focused in the metropolitan area of Houston, Texas, and Sterling Heights, Michigan, all municipal fire departments would benefit from the empirical findings of this study. The goal was to determine the effectiveness of fire officer training by utilizing the rendered empirical research

findings to influence educational modalities of the current generation, the next generation, and scaffold to progress further generations.

Research Question

RQ1: Is there a difference in the fire officer leadership self-efficacy scores of officers who have attended fire officer training school and those who have not attended fire officer school?

Definitions

1. *Affective processes* - Processes regulating emotional states and elicitation of emotional reactions (Bandura, 1994).
2. *Bad leadership* - Leaders who exhibit behaviors that are associated with harmful consequences for followers and organizations (Stanley & Stanley, 2017).
3. *Cognitive processes* - Thinking processes involved in the acquisition, organization, and use of information (Bandura, 1994).
4. *Desire* - Human nature in activation (Lee, 2006).
5. *Fire Officer* - Any promoted or appointed officer position below that of chief fire officer. May include sergeant, lieutenant, captain, battalion chief, assistant chief, and deputy chief (Light, 2016).
6. *Good leadership* - Understanding and finding comfort that leadership is dynamic, one must lead without the necessity for titles, must be able to connect with the organizations mission, be supportive of employee development, and provide opportunities to contribute in servitude (Miller, 2015).
7. *Grit* - Perseverance and passion to seek out and attempt to achieve long-term goals (Duckworth & Quinn, 2009).

8. *Leadership* - “The process of interactive influence that occurs when, in a given context, some people accept someone as their leader to achieve common goals" (Silva, 2016, p. 4).
9. *Leadership self*-efficacy - Leadership self-efficacy is defined as individuals’ perceived judgment that they are capable of successfully exerting leadership through the deployment of direction setting of a group in order to gain commitment to work and modifying goals (Paglis & Green, 2002).
10. *Perceived self-efficacy* - Individual’s beliefs about their own capabilities to produce effects (Bandura, 1994).
11. *Psychological momentum* - Perceptual phenomenon of experiencing continued successes or failures (Iso-Ahola & Dotson, 2016).
12. *Self-efficacy* - An individual’s belief in their capacity to execute functions at a specific level of attainment (Bandura, 1977).
13. *Self-regulation* - Exercise of influence over one’s own motivation, though processes, emotional states, and patterns of behavior (Bandura, 1994).
14. *Training* - An organized procedure through which individuals obtain knowledge or improve skills for a defined purpose (Beach, 1985).

CHAPTER TWO: LITERATURE REVIEW

Overview

This chapter serves as a review of the related literature as well as providing an examination into underlying theories and research for this study. This chapter provides insight into previous findings regarding fire service operations, leadership, and the theories that support such entities. This section also examines leadership self-efficacy, leadership self-efficacy scores, and leadership training. From such investigation, the necessity for research emerged as a gap in literature was made obvious regarding the effectiveness of introductory fire officer education. Three theories were utilized to assist in the understanding of leadership and how leadership develops in individuals. These include self-efficacy theory (Bandura, 1977), social cognitive theory (Bandura, 1986), and adult learning theory (Knowles et al., 2015). This section will conclude with examination of and synthesis of available literature as it relates to the variables, followed by a summation.

Theoretical Framework

The theoretical framework surrounding leadership in emergency services involves theories which typically drive much of adult learning. Understanding the foundational significance of the following theories is paramount to the advancement of adult learning, and thus, the support and advancement of the research of this study. These include self-efficacy theory (Bandura, 1977), social cognitive theory (Bandura, 1986), and adult learning theory (Knowles et al., 2015).

Theories and conceptual perceptions have changed many times over the last half of a century (Hsieh & Tai, 2020). Early research on leadership focused on the actual leaders themselves, virtually eliminating all other potential variables (Tannenbaum & Massarik, 1957).

Since then, Burns (1978) defined leadership as a developmental human process that originated from the meeting of human needs. Bennis and Nanus (1985) detailed the core elements of leadership to include: maintaining organizational progression, translation of goals into practice, strategic planning, and ensuring supportive actions. More recently, Robbins (2000) believed leadership is defined as the ability to influence the members of an organization to achieve a vision or goal. Desired leadership dynamics occur when leaders and subordinates collaborate to create a product that is greater than the sum of the parts (Hsieh & Tai, 2020).

Theoretical exploration was performed to determine the best support for the basis of this study and to bolster and fortify its significance and potential implications. Learning and development are the common themes involved with these theories. Self-efficacy theory (Bandura, 1977), social cognitive theory (Bandura, 1986), and adult learning theory (Knowles et al., 2015) were utilized to assist in the understanding of leadership and how leadership develops in individuals. All are imperative in providing understanding of the psychology of learning and are just a couple tools to explain how leadership advances. These theories are closely related, but also very different in contexts. Self-efficacy theory (Bandura, 1977) deals with how individuals perceive their capabilities and their relationship to their actions and outcomes. Social cognitive theory (Bandura, 1986) explains how adults learn through the observations of others. Adult learning theory (Knowles et al., 2015) concerns the ways adults learn through traditional didactic means. It is important to note that no single theory encompasses learning, but each theory simply contributes to a global understanding of how individuals learn (Arghode et al., 2017).

Self-Efficacy Theory

This section serves as an examination of self-efficacy theory originally detailed by Bandura (2010). Self-efficacy is the major concentration of research within this study and the

major premise of this topic and support for its findings. This section examines this theory and many subsequent works to provide an explanation of why self-efficacy is imperative to the success of a fire service officer.

Albert Bandura, a psychologist and professor emeritus, is the father and originator of theoretical construct of self-efficacy and self-efficacy theory (Pietluch, 2020). Contrary to previous works that concentrated on psychoanalysis, Bandura emphasized a more cognitive and informational processing approach that mediates social behavior (Grusec, 2020). The purpose of the establishment and detailing of self-efficacy theory was to bring to understanding of how individuals' perceived self-efficacy empowers them to employ control over the quality of their personal performance in order to control the course of their respective lives through successful management (Bandura & Bandura, 2006).

Perceived self-efficacy is defined as individuals' beliefs about their own capabilities to produce their desired levels of performance that influences particular events that affects their lives (Bandura, 2010). Bandura's profound research in self-efficacy theory displays that perceived self-efficacy influences educators and learners to create higher goals than many would with lesser degrees of perceived self-efficacy, as well as possessing a greater likelihood of possessing applied goal-achieving dedication (Bandura & Wood, 1989; Golas, 2010). The belief in oneself (self-efficacy) contributes to a person's interpretation of their capabilities and leads to their eventual successes in life (Bandura, 2010). Self-efficacy beliefs contribute to individual's cognition processes, affective, motivation, and selection processes (Bandura, 2010).

Individuals with low self-efficacy tend to avoid challenging endeavors, whereas people with high self-efficacy tend to consider challenges as tasks that they have the opportunity to overcome and master (Bandura, 2010). According to Bandura and Locke (2003), self-efficacy is

rooted in the fundamental conviction that the individual has the aptitude to conquer the current presented challenges; otherwise, there would be little incentive to actually attempt to overcome such challenges. This would explain why high-level officers enjoy challenges, similar to how high-level athletes enjoy high-level competition.

Fire officers must continue to strive for excellence. The development of student leader self-efficacy is crucial to learning experiences, that in return empowers students and promotes grit, resiliency, and perseverance (Astin & Astin, 2000; Cress et al., 2001). Grit is defined as perseverance and passion to seek out and attempt to achieve long-term goals (Duckworth & Quinn, 2009), is necessary in the approach toward challenging tasks, and has been found to greatly contribute to student learning success (Duckworth, 2016).

Self-efficacy is a trend that usually takes one of two routes. Either it continues down the road of unresolved ventures or it serves the possessor well and takes them to new heights. Self-efficacy is this strength that does not just support the attacking of initial challenges, but the increased interest and continued and developed steadfastness to progress one's related abilities (Bandura, 2010). The increasing of self-efficacy promotes greater self-efficacy through continued and further engrossment in undertakings (Bandura, 2010). This helps in the explanation of why successful people usually find continued success, why it is so difficult for struggling individuals to get out of ruts, why many fire officers seem to love what they do, and why others may seek other means of providing self-efficacy satisfaction.

Individuals who seek higher self-efficacy tend to pursue challenges, elevate their skills and performance to overcome their encounters, quickly recover from setbacks, attribute failure to the lack of received knowledge or skill, and are strongly committed (Bandura, 2010). Contrarily, the ones whose self-efficacy is low or developing tends to result in low aspirations, weak

commitments, and succumb to the potential for failure through the unwillingness to confront such challenges (Bandura, 2010).

Attaining mastery levels of experiences builds self-efficacy (Bandura, 1994). In the fire service, it seems to take much time building significant experiences. By the time firefighters enter leadership roles, they may not have a significant number of emergency experiences that contribute to the maturing of leadership influence. Considering this dynamic, a greater emphasis must be placed on fire officer education.

Social persuasion is important in the development of leadership. According to Riggio (2017), the greatest contributing factors in leadership are power and influence. The ability to persuade others to adopt a leader's vision heavily influences the ability of the leader. If a leader loses the ability to influence, they lose the ability to support the model of a dynamic leader and follower (Riggio, 2017). A fire officer must know that they have the full support of the crew, and trust that they are willing to support the leader in dire circumstances.

The belief of oneself and abilities is important for the continuance of high levels of self-esteem. Transformational leadership is known to make efficient use of dynamics to support subordinate stimulation, progression, and cultivate buy-in (Bennis & Nanus, 1985). These types of leaders support self-confidence, performance, attitude, and intelligence enhancement through providing clear organizational goals (Bass, 1985). In a setting of educational foundations, self-efficacy is one of the greatest contributing factors that lead to educators' and learners' participation in pursuit of goal attainment through autonomic actions (Erlich & Russ-Eft, 2011).

The fashioning of leadership is determined by the motivations and needs of the ones being led. Burns (1978) detailed two dissimilar types of leadership, coined transforming leadership and transactional leadership. Transactional leadership is driven by the intrinsic

motivations and necessities of subordinates; whereas transformational leadership is driven by subordinates' extrinsic motivations and needs (Burns, 1978). Transformational leadership seeks to promote each other through assessing for greater needs and through motivation (Burns, 1978).

A strong and significant relationship was found between transformational leadership and self-esteem (Matzler et al., 2015). Positive affirmation in the form of social persuasion may be influential in future leadership instances (Seibert et al., 2017). Positive thoughts and messages promote greater thoughts and images, and the promotion of such positive actions leads to greater future leadership influence (Seibert et al., 2017).

Social cognitive theory says that self-efficacy leads to teacher competency (Bandura, 1971). Learning from others contributes to continued learning, development, and confidence. When leaders are competent, subordinates usually are confident. When they reach confident levels, they tend to find greater success. Leaders are at their best when they believe in their work. Fire officers perform best when they possess high levels of self-efficacy or are confident and believe in their own capabilities. Confidence is derived from knowledge of a subject and/or successful experience (Bandura, 1994).

There are many potential sources of attaining high levels of self-efficacy. All are necessary to attain effective levels of leadership. Such potential sources of self-efficacy include: the mastery of experiences, vicarious models from social models, social persuasion, and enhancing positive self-beliefs while minimizing negative ones (Bandura, 2010). Vicarious models of leadership are an important element in the birth and development of a leader. The primary mechanism through which transformational leaders influence others is through the development of self-efficacy (House & Shamir, 1993). Role modeling is one of the greatest contributors to effective and transformational leadership (Pillai & Williams, 2004).

Bandura's belief is that the greater the level of preparation for a particular experience, the greater the level of self-efficacy (Bandura, 1997). Bandura stated that a person's environment is constantly influencing the individual's behavior, and that self-efficacy is the most integral element of a person's collection of knowledge (Bandura, 1997). Also, a person's self-efficacy is individuals' beliefs (how they feel, think, and where their behavior can be explained through motivation) that they are capable of achieving certain goals (Bandura, 1997). Not only is self-efficacy the belief in oneself, but also the confidence that they are able to conquer presented challenges (Ghadiri et al., 2018). One of the challenges is to determine the levels of self-efficacy for each individual, identify what can promote self-efficacy of the individuals, and how the strategy may be orchestrated. Measurements of progress are some elements that may be used for improvement. The same can be said regarding self-efficacy.

Self-efficacy is an individual's belief in their capacity to execute functions at a specific level of attainment (Bandura, 1977). An individual's perceived self-efficacy is the individual's beliefs about their own capabilities to produce effects (Bandura, 1994). It is this belief that is the basic foundation of human motivation, performance accomplishments, and emotional well-being (Bandura, 1997, 2006). Individuals (such as fire officers) who do not believe in their capabilities from previous experiences affects their actions and are less apt to undertake difficult tasks and persevere when times become difficult (Bandura, 1997). What guides and motivates human behavior is rooted in the belief that individuals are able to make a difference with their actions (Bandura, 1997).

Individuals with high and low self-efficacy in their abilities seem to approach challenges in different manners. People with low self-efficacy tend to avoid challenging endeavors, whereas people with high self-efficacy tend to consider challenges as tasks that they have the

opportunities to overcome and master (Bandura, 2010). This would explain why high-level officers enjoy challenges, just like how high-level athletes enjoy high-level competition.

Fire officers must continue to strive for excellence. Self-efficacy is a trend that usually takes one of two routes. Either it continues down the road of unresolve, or it serves the possessor well and takes them to new heights. Self-efficacy is this strength that does not just support the attacking of initial challenges, but the increased interest and continued and developed steadfastness to progress one's related abilities (Bandura, 2010). Organizations can choose to attempt to succeed or fail, and such potential outcomes are dependent upon the grooming of leadership within such organizations (Bobade & Kharghar, n.d.). The increasing of self-efficacy promotes greater self-efficacy through continued and further engrossment in undertakings (Bandura, 2010). This helps in the explanation of why successful people usually find continued success, and why it is so difficult for struggling individuals to get out of ruts. Psychological momentum (PM) plays a critical component in personal achievement and success (Iso-Ahola & Dotson, 2016). The perceptual phenomenon of PM would explain why successful leaders tend to encounter continued successes and why it is difficult to reverse PM toward a favorable trend (Iso-Ahola & Dotson, 2016). It would also explain why many fire officers seem to love what they do, and why others may seek other means of developing and progressing leadership self-efficacy. Many times, partially due to complacency, it may be quite difficult for individuals to escape the 'fur-lined rut' where they may reside (Kelliher & Richardson, 2018).

An immense amount of time and effort was performed by the researcher in order to secure exactly pertinent information from literature to no avail. This study attempts to derive useful and pertinent liturgical information from other studies; however, the current theoretical exploration and verification of the topic of leadership in the fire service is quite sparse (Hsieh &

Tai, 2020). A review of the literature found that there were no found peer-reviewed literature on leadership self-efficacy of fire service leadership and officer training.

Social Cognitive Theory

Social cognitive theory and self-efficacy theory occupy some overlap, and both assist in the comprehension of learning and development. According to social cognitive theory, it is the tool of self-efficacy that best contributes to the application of learned knowledge to new situations and overcome challenges (Seibert et al., 2017). It is necessary in fire officer education to include an element of problem solving, as the success of overcoming challenges increases self-efficacy and better equips individuals for tackling future challenges (Bandura, 1994); as there it seems as though every instance has distinct characteristics.

Along with self-efficacy theory, Bandura also developed social cognitive theory. Social cognitive theory explains how fire officers learn through emulating behaviors and reactions to outside stimuli that warrants a reactive response to lead in times of emergency (Bandura, 1971). Through fire officer training, prospective fire officers are drilled in fireground tactics. This cognitive training prepares eventual fire officers to provide leadership response to fire service-related issues and provide the who, what, when, where, why, and how to mitigate such issues.

Bandura (1994) stated that the most effective way to develop self-efficacy is through the mastery of experiences. Where fireground tactics are ever dynamic, there are many major themes that tend to be repeated. Fire officer education thrives in the delivery of repetitive decision-making scenarios and conveyance of desired and undesirable results.

Social cognitive theory (Bandura, 1986) states that self-efficacy leads to competency (Bandura, 1971). Learning from others contributes to learning, development, and confidence. When leaders are competent, subordinates usually are confident. When they reach confident

levels, they tend to find greater success. Leaders are at their best when they believe in their work. Finding success through personal accomplishments directly leads to successful future outcomes (Fitzgerald & Schutte, 2010).

Leader self-efficacy is imperative to the success of the teachers and the students. One of the greatest challenges in leadership is to assist leaders to reach a level of high self-efficacy. Social cognitive theory (Bandura, 1986) is the idea that humans learn through social means. It rationalizes learning through experiencing outside stimuli, evaluating such processes, collecting ideas, forming opinions, and using found opinions to make decisions and influence the outside world (Bandura, 1971).

Bandura (1977) stated that self-efficacy may be derived from four states that include: performance accomplishments, experience, verbal persuasion, and physiological states. If any of these areas lack, it may be difficult for self-efficacy to flourish. Being that new fire officers do not have experience in fire leadership, leadership self-efficacy may not have a chance to develop. With this said, fire officer education plays an immense role in the development of leadership self-efficacy, thus early success of fire officers.

Adult Learning Theory

Malcolm Knowles was an adult educator and is widely considered to be the father of adult learning (Celli & Young, 2017). Knowles (1978) popularized the study of andragogy, or the facilitated and developmental processes that assist adult learning. Knowles was known for comparing and contrasting the differences in learning processes between children and adults (Merriam & Caffarella, 1999). Consistent with adult learning theory (Knowles et al., 2015), adults take learning quite seriously and it is of great importance (Beder, 1989; Merriam, 1993). As adults mature, so do their respective motivations. Whereas children tend to have affinity

toward what is fun, adults tend to take a more responsible direction. Adult learning theory details that adults need to possess a sense of autonomy and need to develop academic agency over their learning in order to maximize their potentials (Knowles et al., 2015). Taris et al. (2010) found that a greater level of autonomy promotes greater learning, and in turn, develops greater level of self-efficacy. This cannot be any more evident than in fire officer training, as their graduation from the programs will thrust the graduates into managerial positions where they must make daily crew-influencing decisions. Adult learning theory operates under five assumptions that support self-concept, adult learner experience, readiness to learn, orientation to learning, and the motivation to learn (Halpern & Tucker, 2015).

Adults are motivated to engage in educational undertakings for three main reasons, that include goal-achievement, socialization, and/or to seek knowledge to satisfy curiosity (Khattab & Wong, 2018). There are many potential links between adult learning theory (Knowles, 1984) and leadership development. For the most part, each adult has autonomy over themselves and their learning. Adult learning tends to be determined by the adult learner. The needs and wants, as well as the when and where, is determined by the adult learning through adult experiences and societal influence (Merriam & Caffarella, 1999).

Within the context of adult learning theory (1984), Knowles made five assumptions that detailed characteristics of adult learners that include (a) self-concept, (b) adult learner experience, (c) readiness to learn, (d) orientation to learning, and (e) motivation to learn (Knowles, 1984). As individuals advance in life, they reach a point where they transition from a dependent being to one that is self-directed and developing self-concept (Knowles, 1984). Most fire officers rise through the ranks of the occupation, whether benefiting from seniority promotions or through testing, from being a probationary firefighter to where they advance to a

leadership position. Probationary firefighters are quite dependent upon their officers and everyone else in their respective crews. As they mature and become more knowledgeable and experienced, they develop a self-concept. As the adult learner experiences life, their knowledge repertoire increases (Knowles, 1984). As firefighters advance, they register their memories through learning in a bank of retention to potentially be used in future similar instances.

As adult learners advance through the adult stages in life, they tend to focus on developmental tasks that allow them to fill social roles (Knowles, 1984). Each firefighter has certain roles and responsibilities. Truck companies are often responsible for laddering structures and forceable entry. Rescue companies are often responsible for rescues. Engine companies are often responsible for fire extinguishment and medical emergencies. Each individual on each of the aforementioned apparatuses are also responsible for certain obligations. As adult learners advance in their understanding and their ability of learning, they develop advanced thinking that allows the learners to immediately use what they had previously postponed, and their advanced level of thinking allows advancing adult learners to move from subject-centered practicum to one that is problem centered (Knowles, 1984). Just like advancing thinking through the stages of Bloom's Taxonomy (1956) from simple remembering to creation, adults soon switch from a primitive manner of thinking to a more advanced attainment. The fifth assumption depicts adult learners' motivation to learn and their intrinsic orientation (Knowles, 1984).

There are many potential extrinsic and intrinsic motivational entities, but when considering the fifth assumption and fire officer scholarship, the fire officer determines what drives their standings and continued sustenance in their respective roles. Some intrinsic factors of the adult learner that may provide motivation to possess greater enjoyment in the role of fire officer and belief in that role providing a greater purpose and influence. Some external factors

may include prestige and increase in salary. Putra et al. (2017) found that intrinsic motivation leads to an improved work engagement, which leads to an improvement in work performance. They also found that extrinsic motivation did not influence the effectiveness of intrinsic motivations (Putra et al., 2017).

Knowles detailed four principles of andragogy, that includes: the need for adults to be involved in the planning and evaluation of their instruction, experience (whether perceived successes or perceived failures) provides the basis for learning activities, adults are more concerned with learning material that is of immediate relevance that they may be able to utilize to support their needs and their wants in the near future, and adults advance learning from content-centered to problem-centered philosophies (Knowles, 1984). One of the responsibilities of fire officers is to determine, design, and deliver fire-related trainings. They are responsible for their own training, as well as the training of their crews. Adult learners who are responsible for what and when they learn are able to progress their personal learning greater than when someone else chooses the material or topic (Arghode et al., 2017). What commonly drives the topic of fire officer choice training is previous experience, and the needs and wants of the crew. Considering fire officer training, there is much to learn in limited time. Motivated learners usually possess the ability to lessen the potential challenges to learning (Arghode et al., 2017). Much of what fire officers learn will assist them in the immediate future. One of the typical greatest strengths of the fire officer is problem-solving. They are usually very able to take learned cognitive knowledge and succeed at the transference of such knowledge into the ability to mitigate tribulations.

Related Literature

This section shows support that at least partially fills the void in the literature regarding the appropriateness of the current standard of initial fire officer education. While the empirical

findings of leadership are strong and extensive, not much attention has been devoted to fire service officer education. While this topic is still developing, this study provides an advancement in understanding to advance this crucial and essential area of study.

Leadership

Ben Franklin, who is known as the father of the fire department, stated that "without continual growth and progress, such words as improvement, achievement, and success have no meaning" (Atkinson, 2019, p. 1). Over the last couple of centuries, the fire service mission has been rooted in blue collar work, and that has not changed much over the years (Martin, 2020); however, the invention of technologies and progression of standards has led to many changes in fire strategies and tactics (Angle et al., 2019). Fire department undertakings have changed much over the last few years (Griffith & Roberts, 2020). Considering that the elements that dictate fire service engagements has been so dynamic, fire education has had to maintain the provision of necessary support modalities (Angle et al., 2019).

In the fire service, leadership plays an enormous role in the functioning and success of the respective organizations. The main function of leadership exists in the internal maintenance and external adaptations of the organization to ensure continuous and stable growth (Hsieh & Tai, 2020). The definitions of leadership (Miller, 2015) and leadership training and development (Tracy, 2004) are ever evolving, but they may be utilized to describe a definition that includes the recruitment of others and inspiration toward a shared vision (Kouzes & Posner, 2017). Leadership may also be defined as the ability or processes utilized to motivate or influence individuals to achieve organizational goals (Kesting et al., 2016). Success in leadership concerns the development of leaders' self-esteem (Fiaz et al., 2017). The primary focus of successful leadership includes the successful transition of visions and goals into fruition (Robbins, 2000), as

well as the assurance and maintenance of continued development, successful planning and plan implementation, and structure creation (Bennis & Nanus, 1985). The success of organizational objectives is not possible without the inclusion of workers (Irawati, 2020). Individuals tend to actively develop in their respective organizations' undertakings, due to the fact of the natural inclination to assume roles in planning, acting, and in the realization of organizational goals and objectives (Córdova et al., 2019; Cui et al., 2019; Sharafoddin & Emsia, 2016).

The organizational dynamics of the fire department are ascertained by the respective governing bodies and consists of a highly structured hierarchy (Meyer et al., 2018). Firefighters, including fire officers, are exposed to continuous training instances and opportunities; however, there are mandatory fire officer certification programs that prospective fire officers need to satisfy prior to the promotion of sergeant, lieutenant, captain, and other ranks. The National Fire Protection Agency (NFPA) is the governing organization that mandates officers complete Fire Officer I, II, and III prior to assuming certain fire officer positions (NFPA, 2013). Fire Officer I is taken prior to assuming an apparatus boss position (e.g., sergeant or lieutenant). Fire Officer II prior to taking a station boss position (e.g., captain). Fire Officer III prior to leading a shift (e.g., battalion chief; NFPA, 2013). This related literature section will examine the related literature and relationship to the variables of the study. This was performed by examining the academic contributions to leadership literature, extracting fundamental historical views of leadership, detailing organizational leadership, investigating definitions of leadership, emphasizing the roles of leadership, studying leadership strategies and the effects of inferior leadership, and exploring the interpersonal relationships of leaders and subordinates.

Leadership has changed in many ways. Prognostication of today's leadership practices from 10 years ago is as inaccurate as it would be about 10 years from now (Sowcik & Amaladas,

2015). Per capita, the United States is one of the highest ranked countries of death rate to fire ratio (Buttenschon, 2016). There were 1,557,500 reported fires that resulted in 3,430 deaths, 17,675 injuries, and $14.6 billion in property damage in 2007 (Andrews & Brewer, 2010). One way to improve this statistic is to improve fire leadership. In order to improve fire leadership, fire officer training must be a priority.

Leadership is one of the least understood social sciences, even though it is one of the most studied (Bennis & Nanus, 1985). Leadership has adopted many meanings throughout history and is a term that is extensively used in industries, such as academia, business, and politics (Hsieh & Tai, 2020). Leadership cannot simply be defined by examining the psychological and physical qualities of individuals (Tannenbaum et al., 2013). Leadership has been related to such entities such as in detailing the construct of the relation of power, a modality of goal attainment, interpersonal effectiveness, a specific and determined role, attributes of personality, structure initiation, group process foci, the process of demanding compliance, and in influential and persuasive applications (Hsieh & Tai, 2020). Leadership's primary function exists for internal maintenance, external adaptability, and progressive sustainability (Hsieh & Tai, 2020).

Leadership in any organization is one of the most crucial components that contributes to success (Fiaz et al., 2017). Leadership is especially important in industries where leadership are often thrust into life-or-death situations where there is no tolerance for erroneous judgments. Now, more than ever before, addressing the current state of leadership crisis involves defining appropriate leadership (Fiaz et al., 2017). This study sought to determine if there is a significant difference in leadership self-efficacy of fire service leaders who attend officer school compared to those who do not attend. Leadership is a dynamic phenomenon (Miller, 2015). The

phenomenon of leadership deals with influential objectives to achieve organizational feats (Naseer et al., 2016). This study is extremely significant to the advancement of leadership, and thus, every other element in the fire service.

The definition of a leader may be an individual who directs, encourages, and manages all undertakings to maximize performance of an organization in order to attain desired organizational goals (Irawati, 2020). A desired leadership dynamic occurs when leaders and subordinates collaborate to create a product that is greater than the sum of the parts (Hsieh & Tai, 2020). Leaders who develop clear and distinct goals contribute to project success (Aga, 2016). Achieving organizational goals is directly associated with employee performance (Huertas-Valdivia et al., 2019).

Initial leadership research had focused on the leader as the individual being, essentially excluding many of the potential variables (Tannenbaum & Massarik, 1957). The study of fire service leadership is in its infancy. Even though the quantity of research studies related to the needs of fire organizations have increased year by year (Hsieh & Tai, 2020), much needs to be ascertained to maximize the effectiveness of fire officer education.

Maxfield and Russell (2017) performed a phenomenological study that examined leadership of emergency services and found three common themes that include: self-awareness of legitimacy, self-regulation through ethical/value-based leadership, and leader affect through emotional intelligence. Self-awareness of legitimacy did not mean that leadership legitimacy is not due to the positioning of authority, but through experience, education, attention to detail, and the awareness to influence. Successful self-regulation through ethical and value-based leadership is reflected in leaders that do not just show what should be done, but what can be done. Leadership that is predicated on values and ethics should not just present a list of necessary

tasks, but to lead their people to greater level of production potential. Leadership affect through emotional intelligence refers to not just the ability to influence, but to allow and promote a sense of belonging, validation, and empowerment of subordinates (Maxfield & Russell, 2017).

While the leadership industry has thrived over the last decade, leaders have performed poorly in many ways (Maxfield & Russell, 2017). Leadership plays a critical role in industries such as military and education (Hsieh & Tai, 2020). Leadership in the fire service, much like in other industries, comes in various types and styles that are supported by countless variations of skills, abilities, and purposeful education (Hsieh & Tai, 2020). Without good leadership, fire departments may not meet their efficiency needs (Compton & Granito, 2002). The fire service is not like most industries, and leadership in the fire service is not like leadership in other industries. In fact, fire departments need strong leadership more than the majority of other industries (Kupietz, 2010).

Leadership is the trunk in the dichotomy from which the organizational branches extend. The inclusion of leadership is often considered to be the lifeblood of an organization, and the key to its success within emergency services may lie in the hands of such leadership (Maxfield & Russell, 2017). Positions of leadership in the fire service require an extensive range of proficiencies to overcome challenges (Schulte & Thielsch, 2019). Leadership is a trained skillset, and many U.S. companies, like Disney, have brought great leaders up through the ranks of their companies to advance the United States to the pinnacle of industrialization (Smeby, 2005).

Leadership flourishes and is evident in the process of human development (Burns, 1978). Leaders play a vital function in the production of future leaders (Buttenschon, 2016). Good leadership has a trickle-down effect. One of the keys to the assurance of a successful leadership pipeline is to support leadership through the development of abilities, motivation, and inspiration

(Bobade & Kharghar, n.d.). It is the dispersal of information and knowledge throughout an organization that best promotes rapid and effective decision making (Allio, 2015). In training, humans build conscious cognitive memories that support leadership decisions in hasty environments. Training also provides the ability to act based on natural intuition. Also, when considering ethics, unethical leadership promotes and fosters bad environments that end up promoting unethical future leadership (Cialdini et al., 2019). Cialdini et al. (2019) found that members of a group that was led by an unethical leader were more likely to engage in future unethical behavior.

The fire service and police service are similar in many ways (Aubry & Wandrei, 2020). They both have adopted and operate under para-militaristic procedures; they require preservice, academy-style initial education; and they both are committed to providing education to upcoming and newly promoted officers. One challenge is to determine how to best support future leaders in leadership roles in such industries (Roberts et al., 2016). According to Williams and Robinson (2004), police officer training does not support the cognitive nor psychomotor needs of officers. However, according to Herrington (2017), they have found to possess greater communication skills, improved organization skills, better understanding of complex conceptual and managerial issues, and are better leaders.

Foundational Leadership

Each fire department has a hierarchal structure that consists of a chain of command (Light, 2016). Every department consists of different variations; but the structure of natural progression consists of entry-level firefighter, sergeant, lieutenant, captain, battalion chief, assistant chief, and fire chief. This study considered the emergency-response training of the ranks of sergeant, lieutenant, captain, and battalion chief. Administration of such ranks of the

natural progression usually requires the satisfactory completion and graduation of officer training respective to the corresponding rank.

The position of fire officer is complex. The fire officer must master the ability to manage technical, human, and conceptual skills; master significant leadership experiences; and must develop an advanced level of self-awareness (Light, 2016). Once the prospective fire officer has reached promotion-ready status, it is then time to satisfy the departmentally required certification processes.

Education

Educational provinces of learning include cognitive, psychomotor, and affective domains (Sönmez, 2017), and there is no present variance from the fire service. Some of the potential questions in the deliverance of education spotlights the cognitive/psychomotor enigma of balanced education. Another regards the content and andragogy of such education. Roberts et al. (2016) believed that it would behoove officers in the enforcement industry to be educated and conditioned to possess high-level critical and creative thinking skills that complex emergencies warrant.

Leadership has the opportunity to affect progression, development, success, mood, and satisfaction in any organization. Just because an individual occupies a leadership position does not necessarily confer that such individual is a good leader (Kellerman, 2012). Good leadership is the dispersal of information and knowledge throughout an organization that best promotes rapid and effective decision making (Allio, 2015). Leaders play a vital function in the production of future leaders (Buttenschon, 2016). Good leaders cultivate good leaders (Buttenschon, 2016) through a development process based on education, and the contrary is true regarding poor leadership.

Ever since the infamous events of terrorism that occurred September 11th, 2001, where 343 firefighters paid the ultimate sacrifice, the fire service has been challenged in many ways. There have been many more incidents since, like the Boston Marathon bombing, Paris attacks, and many active shootings. One challenging aspect is that of leadership and how to respond to such infamy. Effective leadership is more important now than ever before since the events of 2001 (Buttenschon, 2016), effective leadership is absolutely essential for sound fire operations (Hsieh & Tai, 2020), and leadership preparation begins with education.

Strategy

Leaders need to attain proficient levels of organizational goal fulfillment, interpersonal communication, human capital management, and finance (Fiaz et al., 2017). In the fire service, fire officers are responsible for strategic planning, both prior to incidents and while working within incidents. Fire officers must maximize their performance, as well as the performance of their crew, battalion, and department. Performance is measured by the achievement of strategic planning as part of program policy implementation in support of the organizational mission (Moeheriono, 2018).

Much like many other industries, the fire service is quite dynamic. One tactic to ensure that a group of firefighters maximize their effectiveness is through strong leadership (Buttenschon, 2016). This study sought to determine if there is a significant difference in leadership self-efficacy of fire service leaders who attend officer school compared to those who do not attend. Allio (2015) believed that it is the adoption and implementation of efficient strategies that best support organizational success. Strategies are one aspect that is learned from fire officer school. Some examples of strategies include (a) fire ground tactics; (b) human resources management; (c) ethical response; (d) community outreach and education; (e)

communications; (f) risk management; (g) health, safety and wellbeing, and personnel management; (h) disaster mitigation; (i) strategic development, practice, and actualization; (j) training; (k) physical fitness; and (l) protocol understanding, just to name a few.

While desirable leadership styles and attributes have been studied at great lengths, poor leadership styles have recently received attention. Some of the found attributes that lead to poor leadership include tyranny, abuse, undermining, destruction, and despotic leadership (Naseer et al., 2016). If fire administration provides optimum officer training, the officers are best equipped to serve their crews. If their crews are best equipped, they are then best suited to render care to the citizens of which they serve. If the officers are ill-equipped, this will also tend to trickle down in a negative fashion and increase the propensity of all members exhibiting some of the aforementioned destructive attributes.

Error in judgment of a fire service officer may result in the loss of human lives (Buttenschon, 2016). Mentorship in the fire service is minimal to nonexistent. This places a greater emphasis on early training. There is a cascading effect to training and education in the fire department. It is the duty of the fire officer to deliver educational opportunities to the usually less experienced firefighters (Maru, 2017).

Evaluation

One of the responsibilities of fire officers is to perform the evaluation of subordinates. Evaluation is essential to determine where one stands, and the projection of one's future. The purpose of fire performance evaluations is to measure the extent of the performance of employees to formulate progressive courses of action to provide essential benefits to both the individual, and subsequently to the organization (Irawati, 2020). Performance evaluations are

essential to fire departments in order to determine abilities, goal acceptance, goal achievement, and to determine corrective methods (Irawati, 2020).

In the perspective of leadership, leaders do not just have to care for themselves, but of others as well (Greenleaf, 1970). Greenleaf (1970) stated that a successful leader is an individual who has adopted a servant heart and attitude and ensures others' needs are met before their own. He then further detailed that leaders who adopt these philosophies develop into leaders of authenticity (Greenleaf, 1970). Servant leadership, first detailed by Greenleaf (1970), is an environment of occupation where leaders satisfy subordinates' needs to employ growth (Russell, 2016b). Much like Maslow's hierarchy of needs (1943), basic needs must be met prior to the advancement of the person.

Servant Leadership

Leadership and servanthood may be closely related. Hsieh and Tai (2020) stated that servant leadership begins with a natural desire to serve others first, and such conscious decision further develops leaders' aspiration to lead. Any single leadership behavior or decision affects and changes the course of the entire organization (Hsieh & Tai, 2020). In order for an organization to experience opportunistic operational outcomes, effective leadership is essential (Hsieh & Tai, 2020). The transition of becoming a leader to *being* a leader generates leaders' self-actualization (Maslow & Lewis, 1987), who in part finds authority, strength, and success (Greenleaf, 1996; Russell, 2016a; Sendjaya, 2015).

Obviously, servant leadership in the fire service is a desirable leadership philosophy, but it is also how subordinates in the fire service interpret the roles and responsibilities of leaders (Russell, 2016a; Russell et al., 2018). One of leaders' responsibilities in the fire service is to manage emergency scenes; however, there is much more to leadership of the fire officer than just

scene management. The most important element in fire officer leadership is what is done before and after incidents (Maxfield & Russell, 2017). This may include preparation of emergency scene mitigation responses and after-action practices.

Leadership Training

The definition of leadership is ever evolving (Miller, 2015), but it may be described "to enlist others and inspire a shared vision" (Kouzes & Posner, 2017, p. 133). Leadership cannot simply be defined by examining the psychological and physical qualities of individuals (Tannenbaum et al., 2013). It is when leader and subordinates are able to collaborate their actions to accomplish more than the simple sum of the parts where a good leadership interaction is defined (Hsieh & Tai, 2020).

Good leadership may be defined as understanding and finding comfort that leadership is dynamic; leaders must lead without the necessity for titles; leaders must be able to connect with the organization's mission, be supportive of employee development, and provide opportunities to contribute to servitude (Miller, 2015). This is in contrast to inferior leadership that occurs when leaders exhibit behaviors that are associated with harmful consequences for followers and organizations (Stanley & Stanley, 2017). Recognizing training requirements and training needs is critical to operational success (Huddlestone & Pike, 2017). Through such analysis, leaders are able to accurately determine the functional definition of training audience (Huddlestone & Pike, 2017).

Firefighters spend many hours in training, as the fire service necessitates such quantity of training due to its complexity and dynamic nature. Training may be defined as an organized procedure through which individuals obtain knowledge or improve skills for a defined purpose (Beach, 1985). This may also be interpreted as the product of teaching and learning activities for

the primary purpose of assisting members of an organization in the acquisition and application of the necessary cognitive, psychomotor, and affective attributes and skills that assist members of an organization to perform a particular job.

This world necessitates that employment of leadership extends beyond the knowledge and expertise of the actual leaders (Roberts et al., 2016). It is important to note that leaders must consider formal education as an enabler to learning as opposed to adopting an inadequately justified mindset that formal learning is an end in and of itself (Roberts et al., 2016). Much of what is learned from formal training should be considered in field command strategies, but as a tool to assist in the interpretation of key findings from a field assessment and not necessarily to be accepted as strategy of 100% certainty. This philosophy is imperative to the building of a successful educational pathway for leadership (Roberts et al., 2016). Fire officers must continue to strive for an improving their educational experience, as this improves an individual's repertoire of understanding (Knowles, 1984) and leads to an enhanced fire officer.

Training provides many essential elements for desired leadership. In training, individuals build conscious cognitive memories that support leadership decisions in hasty environments. Training also provides the ability to act based on natural intuition. Also, when considering ethics, unethical leadership promotes and fosters bad environments that end up promoting unethical future leadership (Cialdini et al., 2019).

Education is an important tool that is able to build leadership capabilities throughout organizations and for the development of a climate of critical thinking (Roberts et al., 2016). Continued education and learning assist in the progression of organizations to comprehend potential new ways of operation, which is necessary for such a dynamic and complex industry (Roberts et al., 2016). Fire organizations need to establish a more strategic approach in the

identification and creation of educational opportunities for fire officers. The effectiveness of learning rests within the students' underlying ability to learn (Roberts et al., 2016). Knowledge attainment is available to the ones who capture the opportunities. The most important role in education is grounded in equipping individuals toward becoming greater leaders (Roberts et al., 2016).

Much of the existing literature has concentrated on the firefighter position, but leadership studies are of greater importance as leadership affects the whole institution. Every day, fire officers are thrust into an uncertain environment and are responsible to stabilize such environment while mitigating unfortunate circumstances (Sienkiewicz-Malyjurek, 2016). Fire officer leadership training is the necessary training that every fire officer must suffice prior to promotion at any leadership position. This includes promotion to sergeant, lieutenant, captain, and chief. Without such training, a promotion may not occur.

There may be greater challenges for occupational advancement for women in the fire service, and that gender differences exist when considering education and fire department leadership (Bentley et al., 2016). There is a greater challenge for women to advance into chief positions. While there are many more males than females in the fire service and police service, with an estimated 87% of police officers and 96% of firefighters being male (Bentley et al., 2016), women were presented with many other challenges not present in the advancement process of males, that include sexism, career penalties pertaining to family responsibilities that were not present in the male experience, fewer role models and sponsors, and less developed networks (Parkinson et al., 2019). The investigation of the advancement of women in chief positions in the fire service resulted in acknowledging four themes that include transformational leadership, barriers, diversifying assignments, and education (Ballaro & Blanchard, 2018).

Education assists an individual to advance into leadership positions. Ballaro and Blanchard (2018) found that for any women to advance into chief positions, the pursuit of higher education and training is not just significant factors that contribute to success in this arena but are necessary. Martin (2020) stated that some firefighters received promotions largely because they have a college degree even though competitors possess more experience and occupational knowhow.

According to the United States Fire Administration (USFA; 2020), there is not a specific agency or program that holds jurisdiction to regulate the standards and competencies for fire officers. The main resource for guidance in operations in the fire service is from the NFPA (Light, 2016). The NFPA (2013) identifies the performance requirements that are necessary for the duties and promotion of a fire officer. It outlines six components for fire officer training to include: human resource management, community and government relations, administration, inspection and investigation, emergency services delivery, emergency management, and health and safety (NFPA, 2013). Along with outlining the fire officer education requirements, it also outlines the minimum job performance requirements that are necessary to perform the duties of a fire officer. These include: four levels of progression and are (a) Fire Officer 1 supervisory level, (b) Fire Officer 2 supervisory/managerial level, (c) Fire Officer 3 managerial/administrative level, and (d) Fire Officer 4 administrative level (NFPA, 2013). While this is the standard and many departments follow this exclusively, they are also simply guidelines.

The National Institute for Occupational Safety and Health (NIOSH; 2016) states that Blue Card is 100% based on command safety, fire command, and the eight functions of command (Blue Card, 2018). Blue Card consists of nine asynchronous online education modules, and a one-day psychomotor training session and testing. Function 1 is Deployment:

Resource Management and Staging. Function 2 is Assume, Confirm and Position Command. Function 3 is Situation Evaluation. Function 4 is Strategy and Incident Action Planning. Function 5 is Communications. Function 6 is Organization. Function 7 is Review, Evaluate, Revise. Function 8 is Continue, Support, and Terminate Command. The psychomotor sessions include 4 sections. These include Mayday Operations, Managing Multi-Patient Emergency Medical Services (EMS) Incidents, Managing Violent Incidents, and Managing Hazardous Materials (HAZMAT) Incidents.

Emergent situations require emergent response. This requires leadership to master many elements of emergent leadership. When managing emergency scenes, leadership is not just faced with the emergency at hand, but the stressors are heavily compounded by time, pressure, and consequence (Maxfield & Russell, 2017). Such processes do not enjoy the luxury of reflection, contemplation, and long-term analysis (Maxfield & Russell, 2017), but leadership must absorb all training to create the leader who will eventually respond to emergencies that require such preparation. Fire officers also have an additional element that most leaders in other industries do not usually encounter. Fire officers often have to provide leadership direction when they are physically and mentally fatigued. This is where leadership from within the fire service and leadership in the private sector differs (Gill, 2009).

Leadership Self-Efficacy

Leadership self-efficacy is a social and organizational construct that has garnered research interest in recent times. Leadership self-efficacy is associated with desired leadership attributes, such as leader emergence, individual performance, and group performance (Rehm & Selznick, 2019). Leadership self-efficacy not only contributes to current organizational, social, and individual operations, but it possesses significant implications for the development and

practice of future initiatives, research, and the development of the future generations of leaders (Rehm & Selznick, 2019).

There are many elements that contribute to leadership self-efficacy through existential development and education. Three sources of experience are noted to contribute to the development of leaders (Day, 2012; McCauley et al., 1998; Yukl, 2010) to include formal development programs (i.e., off duty training and education for the purpose of leadership development and effectiveness), development job challenges (i.e., unique issues and responsibilities of regular job duties; McCauley et al., 1994, 2010), and developmental supervision (i.e., received coaching and role modeling from supervision during regular work; Arnold et al., 2000). Leaders who are go-getters and seek outside leadership improvement educational modalities, even if it means that they have do attend outside of work, have proven to find success in leadership (Day, 2012; McCauley et al., 1998; Yukl, 2010). Mentorship provisions for leaders to emulate, and for leaders to benefit from the existential experience of learning through the overcoming of obstacles is invaluable.

One element that is necessary to maximize the type of development that best supports fire officers is leadership self-efficacy. Many potential factors exist regarding leadership self-efficacy development. Empirical research has shown that contributing factors, such as leadership self-efficacy and managers' support network, support development and leadership outcomes (Seibert et al., 2017).

Blue Card Fire Officer Training

The specific course that encompasses fire officer school is titled Blue Card. Blue Card is a fire officer training program that is based out of Phoenix, Arizona, and is designed and delivered by a family of fire chiefs – the Brunacini family. The format is primarily online, with a

summative psychomotor element that attempts to develop fire officer conditioning through repetitive incident scenario training. This is on-ground training that the candidate arranges with Blue Card at a training center local to the participants. Southeastern Michigan has many potential and convenient training centers. Blue Card is completely based on fire command, command safety, and the eight functions of command that include (a) assumption/confirmation/positioning, (b) situation evaluation which includes risk management, (c) communications, (d) deployment, (e) strategy/incident action planning, (f) organization, (g) review/revision, and (h) transfer/continuation/termination (National Institute for Occupational Safety and Health, 2016).

Influence of Experience

The theoretical supports considered for this study are self-efficacy theory (Bandura, 1977), social cognitive theory (Bandura, 1986), and adult learning theory (Knowles et al., 2015). This purposefully chosen set of theories provides a thorough theoretical background that encompasses the foundation of which this study is built. They depict how adults learn and how learning occurs, but they also examine self-efficacy and suggest the influence that self-efficacy theory (Bandura, 1977) has on leaders and leadership outcomes.

Within the study, both leadership self-efficacy scores and leadership training were considered; however, there is one element that was not measured in this study that may provide an influence. It is that of experience. Previous experience and cognitive training contribute to success and satisfaction of desired outcomes. Existential knowledge in fire service leadership is more valuable than ever before (Meyer et al., 2018). When considering traditional industry, as leadership experience increased, desirability of dominance-related traits decreased (Nichols, 2016).

Bandura (1977) stated that self-efficacy may be derived from four states that include: performance accomplishments, verbal persuasion, physiological states, and what this section will examine: experience. Experiences encompass great value, even though learning in this fashion progresses at a slower pace (Arghode & Wang, 2016); however, evidence suggests that learning through this process supports greater retention when compared to merely cognitive instruction (Arghode, 2013). Experience may benefit the individual, but it may also provide detriment (Bandura, 1997). This section will examine the idea of experience as a covariate.

There are many contributing factors that lead to the development of leadership self-efficacy. This section will concentrate on how the principle of experience contributes to leadership self-efficacy. According to Bandura et al. (1977), the first mentioned, and greatest contributing factor that leads to leadership self-efficacy is mastery experiences. This is because our mastery experiences are the greatest authentic indicators of an individual's capabilities and capacity (Pfitzner-Eden, 2016).

The second contributing factor in Bandura et al.'s (1977) theory of what leads to leadership self-efficacy are vicarious experiences. This is a concept that leaders may consider when determining if they have found success in their own experiences. When leaders determine if they are successful, they consider the task's difficulty as well as how others have fared under similar circumstances (Bandura, 1997). So, vicarious experiences are quite subjective to a person's personal experience and obtained information. Under this construct and under similar circumstances, a big fish in a small pond would have achieved a greater level of leadership self-efficacy than a comparably-sized fish in a larger pond.

One of the primary functions of a fire officer is that of an educator. Teacher self-efficacy was strongly related to educators who have experienced mastery experiences (Pfitzner-Eden,

2016). Such mastery experiences include the successful occurrences as well as the invaluable failures. Where we often learn from our failures, it is the successful experiences that really propels our self-efficacy beliefs (Pfitzner-Eden, 2016).

The quantity and quality of experience in years does not necessarily equate to a certain number of formative successful life experiences, as years of experience is an objective indicator that does not necessarily provide an evaluative, and easily measurable element (Bandura, 1997). The number of influential life experiences cannot be determined simply by a leader's experience in unit time. While experience in years is not necessary a factor that can be directly related to leadership self-efficacy, it was considered in this study, as successful leadership experiences is extremely difficult to consider and quantify.

There have been many studies from varying industries that support the positive link between experience and self-efficacy (Bandura et al., 1977; Pfitzner-Eden, 2016; Seibert et al., 2017). All provide support for the chosen theories and relate to leadership self-efficacy in fire officers. The considered occupations included in the following are teaching, nursing, and education.

The benefits of experiential learning are difficult to define (Spanjaard et al., 2018). Even though time constraints are limiting factors to learning through experiences, there is great value in learning through this route (Arghode & Wang, 2016). Some researchers believe that it is through experiential learning that provides the greatest, concrete model for knowledge retention, as opposed to simple didactive education (Arghode, 2013).

The success of teaching in a fashion that is necessary to convey information to the degree of understanding is challenging to achieve. Usually, ones that are able to design, create, and deliver education are ones that have achieved great understanding. Not only do they need to

know finite material, but they also need to know volume of material (Murray & Christison, 2019). When considering teaching in relation to self-efficacy, results from empirical research suggested that there was a strong relationship between years of experience and teaching self-efficacy (Adesina et al., 2016; Bolaji et al., 2016; Pérez-Fuentes et al., 2019; Yoo, 2016).

The impact of experience has been studied in other professions. There is well-provided and good synthesis from multiple studies in regard to nursing leadership. When considering nursing, nurses' leadership self-efficacy significantly influenced motivation to lead and future career aspirations (Cziraki et al., 2018), self-efficacy may be predicted by years of leadership experience (Costanzo et al., 2019; Van Dyk et al., 2016), and nurses with greater levels of coping self-efficacy are more likely to view the challenging demands from their occupations as positive (Fallatah et al., 2017). Even though greater self-efficacy levels have shown to exist in closer proximity at the summation of nursing school, prior to the onset of the nursing school experience, experience among nursing students has greatly contributed to a markedly higher level of self-efficacy (Kimhi et al., 2016). This study shows that leaders take their experiences with us, and such experiences contribute to how well we feel we may succeed in future experiences.

In the field of education, a structural equation model discovered that college leadership experiences and high school leadership experiences result in a significant influence on college leadership self-efficacy (Pillai & Williams, 2004). It may be derived that experience in leadership positions in education and volunteer leadership experience in education results in more positively related college leadership experiences as well as further fortified future college leadership experiences (Pillai & Williams, 2004). This experiment showed that leadership

experiences lead to greater leadership self-efficacy that subsequently leads to improved levels of both leadership experiences and leadership self-efficacy.

Experience with education and regular vocational education may lead to leadership self-efficacy. Experiences within educational programs provide opportunities to garner community, practical experience in leadership, and experience in persevering that leads to self-efficacy (Versland, 2016). Educational leaders have the opportunity to develop self-efficacy though creating purposeful instructional activities that place students in positions to gain mastery of leadership strategies (Versland, 2016).

Theorists who specialized in social cognitive theory focused on increasing competence and confidence through authentic mastery experiences (Bandura, 1994). Albert Bandura is one of the most commonly cited academic sources in the world (Haggbloom et al., 2002). Bandura (1994) detailed that four sources of efficacy beliefs exist that include: performance outcomes, vicarious experiences, verbal persuasion, and psychological feedback. Mastery experiences consists of mastering a task, activity, or concept (Bandura, 1994). It is the ability to manage and control themselves within the environment in which one resides. Our world is packed with numerous potential obstacles and adversities that restrict or alter our courses, and we must have a robust sense of self-efficacy in order to set forth a perseverant effort to battle, adapt, and overcome (Bandura, 1994). The mastery of such experiences is the most accurate evidence that depicts the capabilities and propensity of the individual to succeed (Bandura, 1994). It is mastery experiences that drives the potential for the development of self-efficacy (Bandura, 1994). It would be difficult to concretely build self-efficacy without history of mastering experiences.

The ideological perception of leadership drives thoughts and actions. It influences how some choose to support, hire, and who gets granted authority (Spector, 2016). Our previous

experience may benefit us, but it may also hurt us. Just as important to leadership self-efficacy as fortunate experiences, negative experiences are especially detrimental to development (Bandura, 1997). Learning and psychological development is an emotional endeavor. The greater the emotional support, the better chance individuals have to succeeding.

Our emotions, at the time of which we are confronted with a challenge that warrants an action, influences our potential positive thoughts and emotions that builds self-efficacy or leads to aversive thoughts that lead to fears about respective capabilities that may lower perceptions and trigger stress and agitation that produces inadequate performance (Bandura, 1994). Each positive experience (perceived success and sense of accomplishment) propels us toward a greater level of self-efficacy, whereas a negative experience (perceived failure and sense of defeat) yields a negative trajectory. Whereas mastery experiences lead to a greater sense of self-efficacy, undesirable thoughts and fears that are built through negative interactions with others provides a negative reaction and lower perceptions of their capabilities (e.g., self-efficacy; Bandura, 1994).

James (1985) detailed that what people experience is predicated upon what such people choose to attend to. If this is so true, then defining individuals' experiences and how they exercise control over their lives is influenced by the very self-beliefs that influence the choices that lead to those outcomes (Bandura, 1994). Fortunate outcomes usually lead to greater outcomes. Positive experiences lead to greater self-efficacy that leads to greater future successes (Bandura, 1994). The result of the execution of duties of government entities (successes vs failures) is directly related to leadership that influences such actions (Akib & Salam, 2016; Niswaty et al., 2019). Bandura (1994) found that positive experiences lead to a greater sense of self-efficacy. The building of self-efficacy levels subsequently leads to a greater devotion of

effort, length of devotion toward a cause, their level of perseverance toward similar causes, and personal resiliency (Bandura, 1994).

Leaders who have found success in a certain domain of challenges are more apt to tackle subsequent challenges, and if this continues on the same course trajectory, leads to mastery of experiences (Bandura, 1994). The ones who have found success and have accomplished difficult tasks possess an understanding of the degree of effort that is needed and how much endurance is needed to accomplish further tasks (Bandura, 1994). Conversely, the ones that have not had the privilege of satisfying difficult tasks or have not attempted to tackle certain tasks may feel that such task's level of difficulty is anticipated to be greater, subsequent fostering of stress and potential depression create a narrowed vision of how to approach future problem solving (Bandura, 1994).

Summary

In summation, this chapter provided resources that acted as a review of what has already been investigated. This section also served the purpose of acknowledging the immense gap in the literature regarding the appropriateness of the current standard of initial fire officer education. This chapter detailed some of the leadership structures and operations that are in place and some of the theories that were used in this study as support for the evidence found in investigations. It serves as a review of the related literature as well as providing an examination into underlying theories and research for this study. It also provides insight into previous findings regarding fire service operations, leadership, training analyses, and the theories that support such entities. From such investigation, the necessity for research emerged as a large dearth in literature was made obvious regarding the effectiveness of introductory fire officer education.

Three theories were utilized to assist in the understanding of leadership and how leadership develops in individuals. All are imperative in providing understanding of the psychology of learning and are just some tools to explain how leadership advances to develop healthy workplaces (Gulseren et al., 2019). These theories are closely related with some overlap in their philosophies, but also very different in contexts. Self-efficacy theory (Bandura, 1977) details the fundamental components of the relationship between self-efficacy and success. Social cognitive theory (Bandura, 1986) explains how adults learn through the observations of others. Adult learning theory concerns the ways adults learn through traditional didactic means. Self-efficacy theory (Bandura, 1977), social cognitive theory (Bandura, 1986), and adult learning theory (Knowles et al., 2015) will assist in the illustration of leadership subtopics and assist in synthesizing findings to support such topics. The aforementioned theoretical support provided insight into what is already understood to be true. What is not known, is the adequacy level of the current fire officer training and how it satisfies the needs of the fire service. This study seeks to address the gap in the literature by determining if the current standard of officer training is sufficient enough to support fire officer leadership self-efficacy.

Leadership and educational philosophies are quite complex to study, but are imperative to the success, progression, and outcome of each respective organization and institution. A greater understanding of self-efficacy is imperative for leadership development in order for leaders to empower every member of their respective organizations and for continued support of organizational advancement (Caldwell & Hayes, 2016). If it is not subjectively sufficient, or to a level leadership demands it to be, then maybe leadership should seek other means of delivering such training imperative to the safety of their crews so they can best support the citizens.

CHAPTER THREE: METHODS

Overview

The purpose of this quantitative, quasi-experimental research study was to determine if a statistically significant difference exists in fire officer leadership self-efficacy of officers who have attended fire officer training school and those who have not attended fire officer school. In order to determine if differences exist between leadership self-efficacy in fire officers who have and have not experienced fire officer school, further investigation and data requisition was needed. This chapter presents the research methodology by providing explanations of the research design, hypothesis, participants and setting, instrumentation, procedures, and data analysis.

Design

A quasi-experimental, nonequivalent control groups design was used to determine if fire officer school influences fire officer leadership self-efficacy. This research was conducted utilizing a quasi-experimental, nonequivalent control groups design, because it allows researchers to evaluate interventions while possessing the ability to manipulate the variables without the restriction of utilizing randomized participant selection (Gall et al., 2007). A quasi-experimental, nonequivalent control groups design was utilized due to the ability to manipulate the variables, as well as the existence of the unsuitability of randomly assigning individual participants to the treatment and control groups. Quasi-experimental designs are often adopted when conducting randomized control is not achievable or ethical (Harris et al., 2006). Quasi-experimental studies are commonly used within the educational industry (Gall et al., 2007), and was deemed to be most appropriate in this research study.

The independent variable is the presence of fire officer leadership training and are titled: present and not present. The dependent variables are the leadership self-efficacy scores from the LSES (Bobbio & Manganelli, 2009) that are provided from the populations of two fire departments from the state of Michigan. Many recent empirical studies have utilized a non-experimental, quasi-experimental research design to assess for self-efficacy (Hsiao et al., 2021; Liberatore & Wagner, 2022; Toygar et al., 2022). A non-experimental, quasi-experimental design allows the comparison of groups in terms of a cause (Creswell & Creswell, 2017). The most appropriate instrument for this study to assess for the degree of leadership self-efficacy among prospective fire officers before and after fire officer school is the Bobbio and Manganelli's (2009) Leadership Self-Efficacy Scale (LSES).

Research Question(s)

RQ1: Is there a difference in the fire officer leadership self-efficacy scores of officers who have attended fire officer training school and those who have not attended fire officer school?

Hypothesis

$H_0$1: There is no statistically significant difference in fire officer leadership self-efficacy scores of fire officers who have attended fire officer training school and those who have not attended fire officer school.

Participants and Setting

The study examined leadership self-efficacy scores related to preparatory fire officer education. Studied participants included a wide array of fire service officers and examined if a significant difference in leadership self-efficacy of fire service leaders who attend officer school

compared to those who do not attend. This section will describe the population, participants, sampling technique, and setting.

Population

The participants for the study were drawn from fire officers and future fire officers from the two Michigan fire departments. These include the Houston Fire Department (HFD) and the Sterling Heights Fire Department (SHFD). Samples were taken in 2022. HFD services the fourth most populous city of about 2,325,502 residents over an area of 665 square miles with 105 fire stations (Houston, 2022). The HFD is the third largest fire department in the United States, was established in 1838 (Houston, 2022), employs professional firefighters, all of which protect an urban community. SHFD protects the fourth most populous city (suburban) in the state of Michigan. It serves about 135,000 residents over an area of about 36 square miles with five fire stations. SHFD employs professional firefighters.

Participants

The total number of participants sampled was 100. According to Gall et al. (2007), 100 students is the required minimum for a medium effect size with statistical power of .7 at the .05 α level. B-Shifter, the creator and continuing caretaker of the Blue Card program, was contacted for their assistance in participant collection. B-Shifter is based out of Arizona, but Blue Card is a national training modality. B-Shifter provided the researcher with a contact from the HFD to procure participants. HFD, along with SHFD provided the necessary minimum of 100 participants.

Both convenience sampling and voluntary response sampling were utilized in this study. Many empirical studies have utilized convenience sampling methods (Gulmez & Negis Isik, 2020; Harper, 2016; Kim & Beehr, 2017; Tian & Taylor, 2018) to assess for leadership self-

efficacy in leadership and voluntary response sampling (Cheung et al., 2017; Mellerson et al., 2018; Seither et al., 2017; Vermeir et al., 2018) to internally measure education. Convenience sampling is beneficial in that it is inexpensive, efficient, and easy to execute (Jager et al., 2017). It was chosen as the participants are chosen based on availability and convenience (Creswell & Creswell, 2017). Voluntary response sampling is advantageous for its ease (Creswell & Creswell, 2017). Convenience sampling procedure was utilized as the HFD is the only fire department holding Blue Card fire training of substantial numbers when this research study was designed, and participation access was attainable for the SHFD. Voluntary response sampling was utilized within each group after they are placed in treatment and control groups. Benefits to voluntary response sampling are that it took little time to perform, required no training, and it ensured there were equal numbers of representation.

Table 1

Participants

	Treatment Group	Control Group	Total
Participants	43	57	100

Table 2

Education Level (EL)

EL	K-12	Higher Education	Total
Total	0	100	100

Setting

The samples came from two major fire departments that comprised the area of Houston, Texas, and Sterling Heights, Michigan. Within the HFD, prospective fire officers were selected

the from the professional fire department, whose firefighters work 24-hour-long shifts. Each prospective fire officer was placed into either a treatment group (Training) or a control group (No Training). Within the SHFD, prospective fire officers were selected the from the professional fire department, whose firefighters work 24-hour-long shifts. Each prospective fire officer was placed into either a treatment group (Training) or a control group (No Training).

The specific course that encompasses fire officer school is titled Blue Card. Blue Card is a fire officer training program that is based out of Phoenix, Arizona, and is designed and delivered by a family of fire chiefs – the Brunacini family. The format is primarily online, with a summative psychomotor element that attempts to develop fire officer conditioning that the candidate arranges with Blue Card at a training center local to the participants. Southeastern Michigan has many potential and convenient training centers. Blue Card is completely based on fire command, command safety, and the eight functions of command that include (a) assumption/confirmation/positioning, (b) situation evaluation which includes risk management, (c) communications, (d) deployment, (e) strategy/incident action planning, (f) organization, (g) review/revision, and (h) transfer/continuation/termination (National Institute for Occupational Safety and Health, 2016). Blue Card training may be found at https://bshifter.com/about_01.aspx

Instrumentation

The instrument that was utilized in this study to assess for the degree of leadership self-efficacy among prospective fire officers before and after fire officer school was the Bobbio and Manganelli's (2009) Leadership Self-Efficacy Scale (LSES). Permission to use the leadership self-efficacy research instrument for research purposes was provided by Andrea Bobbio (the instrument's co-author) through email. See Appendix A for the LSES (2009). See Appendix C for a copy of the email. The LSES was derived from Bandura's General Self-Efficacy Scale

(1997) and was developed in order to best measure for higher education academic self-efficacy. The LSES is an accurate representation of leaders' views of their capabilities regarding setting a direction for the group, profession clout and the potential to change goals, and overcoming obstacles that inhibit the group from satisfying the objectives (Bobbio & Manganelli, 2009). Bobbio and Manganelli's intention was for researchers to gather composite scores. This instrument has been utilized to provide greater understanding through empirical research in the enterprises of youth leadership (Rehm, 2017; Rehm & Selznick, 2019), and in general adult leadership (Dwyer, 2019). This instrument was used and made considerate contributions in the fields of youth leadership (Rehm & Selznick, 2019) and in general adult leadership (Dwyer, 2019).

One of the principal purposes of the development of the LSES was to develop a multidimensional scale to measure for leadership self-efficacy (Bobbio & Manganelli, 2009). This instrument was created in order to measure for the most vital leadership functions and most essential leadership aptitudes (Bobbio & Manganelli, 2009). Such leadership functions include leadership responsibilities such as setting direction for the group (Yukl, 2010), the ability of leaders to gain trustworthiness and approval of the majority of the group (Hollander, 1958), intrapersonal leadership skills (Bobbio & Manganelli, 2009), and the ability to progress an organization by the creation of new ideas and ability to influence others to adopt such ideas (Brown, 2000).

The procedure used was an emailed Bobbio and Manganelli's LSES (Likert-style) surveys that assessed each participant's general self-efficacy concerning their intrapersonal and interpersonal leadership abilities. In order to test the adequacy of construct validity of such instrument, Bobbio and Manganelli (2009) conducted a study, computed scores for each scale,

calculated correlation coefficients, and compared the differences between males and females by utilizing an independent samples *t* test while utilizing the Leadership Self-Efficacy Scale. In the adult group studied, the skewness and kurtosis for most of the LSES items were found to reside in the range of -1.00 and +1.00, with no value lesser than -1.401 or greater than 1.611 (Bobbio & Manganelli, 2009).

Bobbio and Manganelli's (2009) LSES has been found to be reliable to be highly refined in the areas of reliability and validity for measuring for leadership self-efficacy. Bandura's (1997) General Self-Efficacy Scale (GSES), of which the LSES was derived, is correlated to emotion, optimism, and work satisfaction (Schwarzer & Jerusalem, 1995). Negative coefficients were found for depression, stress, health issues, burnout, and anxiety (Schwarzer & Jerusalem, 1995). There are no subscales for this measurement.

Procedures

Human participants were utilized for this study, so the Institutional Review Board (IRB) needed to provide permission for continuance. See Appendix B for the IRB application form. Mandatory IRB online training certificate needed to be secured prior to the study. The application was completed. Consent documents were provided, distributed, signed, returned, and collected. See Appendix C for the actual consent form. IRB approval was obtained before collecting data or gaining participants.

The participants for the study were drawn from a mixture of methods of sampling that included convenience sampling of fire officers and future fire officers from the Houston Fire Department and the Sterling Heights Fire Department, and voluntary response convenience sampling from within each department to disseminate and form treatment and control groups. Within each group, there was a treatment group (Training) and a control group (No Training).

All potential participants who met the criteria (experienced the training versus did not experience the training), were emailed the appropriate survey. The independent variable is the presence of fire officer leadership training and are titled present and not present. So, there was a total of two groups that included Fire Officers – Training (FO-T) and Fire Officers – No Training (FO-NT). Control groups were added as this strengthens the internal validity of experiments (Gall et al., 2007).

The procedure used was an emailed Bobbio and Manganelli's LSES (Likert-style) surveys that assessed each participant's general self-efficacy concerning their intrapersonal and interpersonal leadership abilities. The expected time to complete this assessment is less than 10 minutes. The assessments are to be sent once prior to fire officer school and once afterwards. The instrument consists of 21 questions and used a seven-point Likert scale that ranged from Not At All True to Exactly True. Responses were as follows: Exactly True = 7, Mostly True = 6, Moderately True = 5, Neutral = 4, Somewhat True = 3, Hardly True = 2, and Not At All True = 1. The higher the number, the greater the admitted relatability to the question. The lower the number, the less the participants admitted that the question or scenario related to them. The combined possible score on the LSES ranged from 21 to 147 points. Scores of 21 points are the lowest possible score, meaning that the participants who entered this score could not have possessed any less self-admitting leadership self-efficacy toward potential performance. Scores of 147 points are the highest, meaning that the participant that entered this score could not have possessed any greater self-admitting sense of leadership self-efficacy. The LSES consists of six dimensions, including: starting and leading change processes in groups, choosing effective followers and delegating responsibilities, building and managing interpersonal relationships within the group, showing self-awareness and self-confidence, motivating people, and gaining

consensus of group members (Bobbio & Manganelli, 2009). Reliability of the original Leadership Self- Efficacy Scale (21 items) was α=.91 (Bobbio & Manganelli, 2009).

A pilot study was performed utilizing 26 members of the Sterling Heights (Michigan) Fire Department (SHFD). The purpose was to test research protocols, the data collection instrument, and research techniques in preparation for the actual study. No training was necessary to implement treatment. The researcher did not have to provide training to the school leadership. The researcher was the only active associate in this study that was not a participant. The instructors of the fire officer school were instructed to provide the LSES at the summation of the training. The treatment is a regionally accepted fire officer school with a set curriculum and operates under an established rigid set of state of Michigan mandates. Each instructor has attended and satisfied minimum requirements to become certified Blue Card instructors.

Study steps and protocols were finalized and accepted. The initial emails were sent per Survey Monkey to a regional training coordinator who is also employed with the Houston Fire Department to distribute to the participants. The same links were also sent to participants from the Sterling Heights Fire Department. The emails included two links. Fire officers who recently completed Blue Card training were asked to complete the survey attached to one of the links. Fire officers and prospective fire officers who have not yet taken the training were asked to complete the same survey, but from the second link. Both were used for comparative purposes. The data were collected and curated by Survey Monkey and manually entered into the Statistical Package for Social Sciences (SPSS). The data were analyzed as described in the following section (Gall et al., 2007).

Data Analysis

The following information includes all the data analysis for the hypothesis. The utilized statistic were independent samples *t* tests. The independent-samples *t* test was used to test the hypothesis. The independent-samples *t* test required certain assumptions be met, such as the level of measurement, outliers, assumptions of normality, and assumptions of equal variance (Green & Salkind, 2003). Data screening included visual examination of data for potential missing entries. The level of measurement was measured on an interval level data. Box and whisker plots were created for each group to inspect for extreme outliers. The dependent variable was checked for equal distribution within each group using a Kolmogorov-Smirnov test. Kolmogorov-Smirnov was used because the sample size was greater than 50 (Warner, 2013). The assumption of equal variance was assessed utilizing the Levene's Test of Equality of Error Variance (Gall et al., 2007). The null hypothesis was rejected at the 95% confidence level. Once the data were collected, the substantive significance (effect size) and the statistical significance (*p* value) was determined. The effect size was represented by Cohen's *d* 0.52 is a medium effect size (Warner, 2013).

CHAPTER FOUR: FINDINGS

Overview

The purpose of this quasi-experimental, nonequivalent control groups study was to determine if a statistically significant difference exists in fire officer leadership self-efficacy of officers who have attended fire officer training school and those who have not attended fire officer school. This chapter comprises the research question, null hypothesis, descriptive statistics, results, and data analysis. This chapter provides the research findings of such analyses.

Research Question

RQ1: Is there a difference in the fire officer leadership self-efficacy scores of officers who have attended fire officer training school and those who have not attended fire officer school?

Null Hypothesis

$H_0$1: There is no statistically significant difference in fire officer leadership self-efficacy scores of fire officers who have attended fire officer training school and those who have not attended fire officer school.

Descriptive Statistics

Descriptive statistics are provided to detail and inform of a potential quasi-experimental effect between the independent variable [the presence of fire officer leadership training and are titled: ‘training’ (T) and ‘no training’ (NT)], and the dependent variables [(the leadership self-efficacy scores from the population of fire officers and future fire officers from the Houston Fire Department (HFD) and the Sterling Heights Fire Department (SHFD)]. Composite mean perceived leadership self-efficacy scores were calculated and tabulated. Data were collected from 100 members of the HFD and the SHFD. Included are 43 fire officers or prospective fire officers

(17 fire officer participants from the HFD, and 27 fire officer participants from the SHFD) who have recently completed Blue Card fire officer incident command training, and 57 firefighters (14 firefighter participants from the HFD, and 43 firefighter participants from the SHFD) who have yet to complete the training. The numbers of the participants from each group are reflected in Table 3. The participants were comprised of a treatment group who experienced training (N = 43) and a control group who did not experience the training (N = 57).

Table 3

Treatment and Control Groups

	Treatment Group	Control Group	Total
Participants	43	57	100

Upon examination of the final research survey results, some survey instrument test item responses were found to be missing. Because the total number of participants (N) was not outside the range that it may be a concern and lesser legitimize the study [the total (at least 100)] met the minimum for a medium effect size with statistical power of .7 at the .05 α level], a participant's response to one of the test items did not relate to the other responses, and the fact that all calculations may be analyzed using the same set of participants (Warner, 2013), listwise deletion was chosen. Data screening was conducted. The data from participants that did not record an answer to any individual test item were excluded from consideration in this research study. The total number of participants assessed were 107, and the total number of entries that were omitted due to incomplete instrument test item answers was 6. One participant was considered to be an extreme outlier. Therefore, the total number of utilized participants was 100.

The self-efficacy means and standard deviations for the independent variables (Training and No Training) were as follows: Training M = 121.86, SD = 11.73. No Training M =115.53,

SD = 12.75. The self-efficacy means and standard deviations for the independent variables are represented in Table 4.

Table 4

Descriptive Statistics – Mean Perceived Self-Efficacy Scores

Independent variable	Training		No Training	
	M	*SD*	*M*	*SD*
Self-efficacy scores	121.86	11.73	115.53	12.75

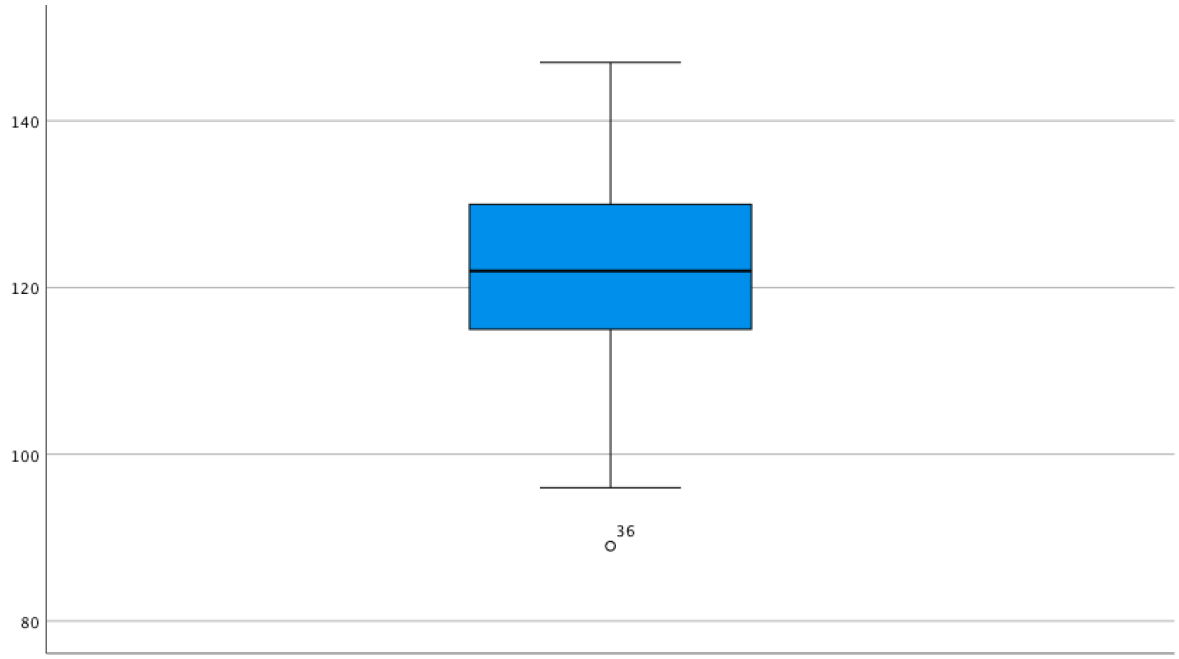
Results

Data Screening

Data screening was conducted on each group's dependent variables regarding data inconsistencies and outliers. The researcher sorted the data on each variable and scanned for inconsistencies. Box and whisker plots were developed to determine the existence of outliers on each dependent variable. One extreme outlier was identified and removed from the data set.

Figure 1

Box and Whisker Plot for Training



Upon examination of Figure 1, one non-extreme outlier was identified. The non-extreme outlier that is represented as a circle (Participant 36) is proximate to the starting edge of the first quartile. The proximal location of this outlier marks it as non-extreme.

Figure 2

Box and Whisker Plot for No Training

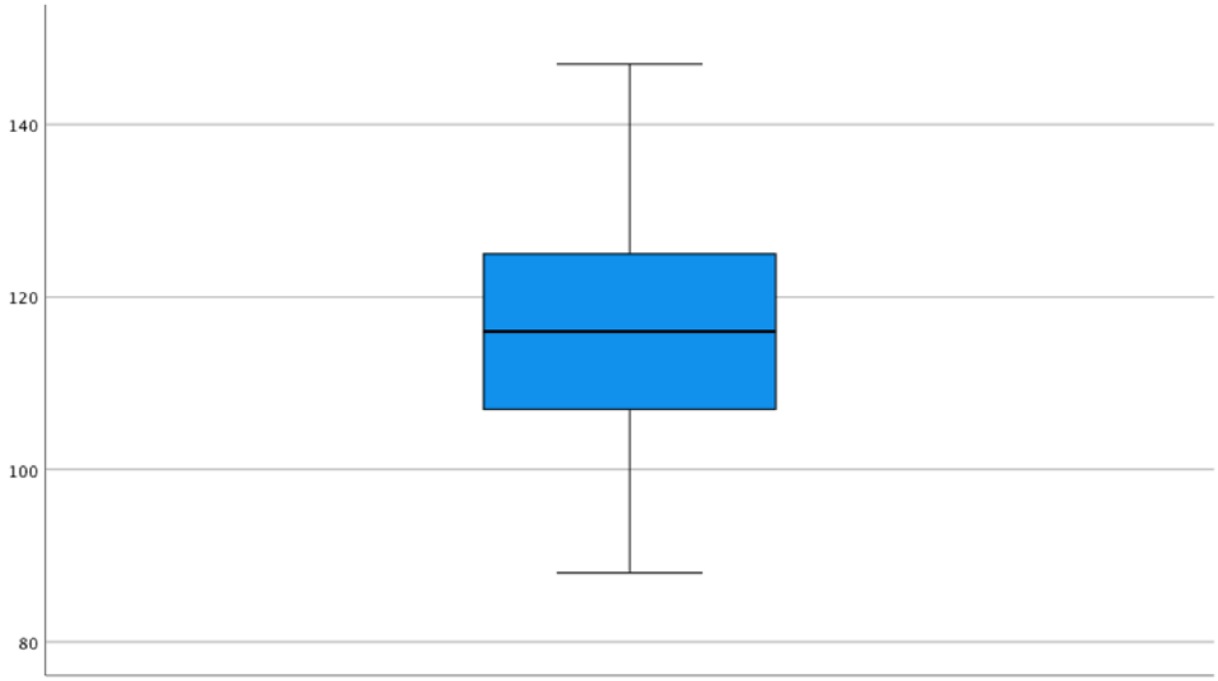


Figure 2 details the box and whisker plot for the control group. The control group did not receive the training. Upon examination of Figure 2, no outlier was identified. Also, the box and whisker plot is almost symmetrical.

Assumptions

An independent samples t-test was utilized to test the null hypothesis that asks if a statistically significant difference exists between fire officer leadership self-efficacy of fire officers who have attended fire officer training school and those who have not attended fire officer school. The t-test required that the assumptions of normality and homogeneity of variance were met (Green & Salkind, 2003). See Table 5 for the Tests of Normality.

Table 5

Tests of Normality

Group	Kolmogorov-Smirnov		
	Statistic	*df*	Significance
Treatment	0.09	43	0.20*
Control	0.06	57	0.20*

The Levene's Test of Equality of Error Variance was conducted to evaluate the assumption of homogeneity of variance for each variable. The assumption of homogeneity was met. See Table 6 for the Levene's Test.

Table 6

Levene's Test of Equality of Error Variance

F	*df*	Significance
0.01	99	0.11

Results of the Null Hypothesis

A t-test was conducted to test the null hypothesis that examined potential differences between the leadership self-efficacy scores of participants who attended fire officer school and participants who did not attend fire officer school. The statistical analysis conducted using SPSS found that a significant difference does not exist between the fire officer leadership self-efficacy scores of firefighters who have attended fire officer training school and firefighters who have not attended fire officer school $t(99)=0.11$, $p < 0.05$. Data shows that participants who have received the training do not possess an overall significantly greater degree of self-efficacy than the

participants who have received the training. The null hypotheses failed to be rejected at the 95% confident level. See Table 7 for the t-test results.

Table 7

t test results

Independent variable	Training		No Training				Cohen's *d*
	M	*SD*	*M*	*SD*	*t*	*p*	
Self-efficacy scores	121.86	11.73	115.53	12.75	1.60	0.11	0.52

CHAPTER FIVE: CONCLUSIONS

Overview

The purpose of this chapter is to provide a review of the empirical findings in association to the theoretical support and the supportive literature. Included in this chapter are subsections titled: discussion, implications, limitations, and recommendations for future research. The discussion subsection includes a detailed explanation of the interdependent relationship of the findings as well as the theoretical framework and existing literature. The implications section will provide an intrapersonal view of the study and its findings. The limitations section will discuss any potential limitations with the study, and this section will conclude with recommendations for future research.

Discussion

The purpose of this research study was to determine if a statistically significant difference existed in fire officer leadership self-efficacy of officers who attended fire officer training school and those who have not attended fire officer school. This subsection will compare and contrast the research findings with previously established findings; however, due to the dearth of previous research findings regarding perceived leadership self-efficacy of fire service officers and non-officers, much comparison will be targeted toward education, learning, and the human mind.

RQ1: Is there a difference in the fire officer leadership self-efficacy scores of officers who have attended fire officer training school and those who have not attended fire officer school?

An independent samples t-test was conducted to test the null hypothesis that examined if a significant difference exists among the leadership self-efficacy scores of the participants who attended fire officer school and the participants who did not attend fire officer school. Data show

that participants who have received the training do possess an overall marginally greater degree of self-efficacy per the means scores; however, the research discovered that no significant difference exists between the fire officer leadership self-efficacy scores of fire officers who have attended fire officer training school and those who have not attended fire officer school. This result was not expected, considering the predominant parts of Bandura's (1977, 1997) and Knowles et al.'s (2015) writings on experience contributing to increased self-efficacy. There are, however, much support from these theories listed below.

It is imperative to preface that both Bandura (1977, 1997) and Knowles et al. (2015) considered the element of experience as just a fragment of many potential contributing factors that lead to increased levels of self-efficacy. Bandura (1977) stated that self-efficacy may be derived from four states that include performance accomplishments, experience, verbal persuasion, and physiological states. Adult learning theory operates under five assumptions that support self-concept, adult learner experience, readiness to learn, orientation to learning, and the motivation to learn (Halpern & Tucker, 2015). Fire officer positions are usually held by more senior firefighters. Considering this, officers usually have more experience and have had more time to amass performance accomplishments; however, experience may also take one down a negative deflection. Firefighters do accrue psychologically stressing experiences that may negatively affect their self-efficacy. Such experiences tend to build up and cause distress or dysfunction at high levels, whereas younger firefighters have yet to build negative experiences. This may bring experienced fire officers down to a similar level as younger firefighters to reflect no significant difference in self-efficacy.

The theoretical framework surrounding leadership in emergency services involves theories which typically drive much of adult learning. Understanding the foundational

significance of the following theories is paramount to the advancement of adult learning, and thus, the support and advancement of the research of this study. Theoretical exploration was performed to determine the best support for the basis of the research findings of this study and to bolster and fortify its significance and potential implications. Learning and development are the common themes involved with these theories that were utilized to assist in the understanding of leadership, and how leadership develops in individuals. These include self-efficacy theory (Bandura, 1977), social cognitive theory (Bandura, 1986), and adult learning theory (Knowles et al., 2015).

An individual's perceived self-efficacy is the individual's beliefs about their own capabilities to produce effects (Bandura, 1994). It is this belief that is the basic foundation of human motivation, performance accomplishments, and emotional well-being (Bandura, 1997, 2006). Belief of oneself and abilities is important for the continuance of high levels of self-esteem. Transformational leadership is known to make efficient use of dynamics to support subordinate stimulation, progression, and change buy-in (Bennis & Nanus, 1985). This type of leadership supports self-confidence, performance, attitude, and intelligence enhancement through providing clear organizational goals (Bass, 1985). Individuals with a higher degree of self-efficacy have a greater propensity of influencing the creation of higher goals, as well as possessing a greater likelihood of possessing applied goal-achieving dedication (Bandura & Wood, 1989; Golas, 2010). Social persuasion is important in the development of leadership. Leadership may be described "to enlist others and inspire a shared vision" (Kouzes & Posner, 2017, p. 133). According to Riggio (2017), the greatest contributing factors in leadership are power and influence. The ability to persuade others to adopt a leader's vision heavily influences the ability of the leader. If a leader loses the ability to influence, they lose the ability to support

the model of a dynamic leader and follower (Riggio, 2017). A fire officer must know that they have the full support of the crew, and trust that they are willing to support the leader in dire circumstances. Fire service leadership and influence was thoroughly assessed by the instrument survey of this study.

The ability or processes utilized to motivate or influence individuals to achieve organizational goals is what defines leadership (Kesting et al., 2016). The primary focus of successful leadership includes the successful transition of visions and goals into fruition (Robbins, 2000), as well as the assurance and maintenance of continued development, successful planning and plan implementation, and structure creation (Bennis & Nanus, 1985). One of the greatest contributing factors of effective leadership is the development of clear and distinct goals (Aga, 2016). Achieving organizational goals is directly associated with employee performance (Huertas-Valdivia et al., 2019). Younger firefighters may develop goals, but fire officers are usually the ones that develop acute-level goals for the firefighters and the remainder of the crew, as well as longer-term goals. It is a surprise that there is not a significant difference in leadership self-efficacy.

Allio (2015) believed that it is the adoption and implementation of efficient strategies that best support organizational success. Strategies are one aspect that is learned from fire officer school. Some examples of strategies include (a) fire ground tactics; (b) human resources management; (c) ethical response; (d) community outreach and education; (e) communications; (f) risk management; (g) health, safety and wellbeing, personnel management; (h) disaster mitigation; (i) strategic development, practice, and actualization; (j) training; physical fitness; and (k) and protocol understanding, just to name a few. Directive provision and following is imperative to the goals of the organization, but more importantly, for the safety, livelihood, and

lives of all firefighters involved. Fire officers have greater education and experience with the development and deployment of strategies. Younger firefighters do not have the privilege of attending fire officer leadership classes that focus on strategy formulation, deployment, and evaluation. From the opinion of the researcher, strategy formulation improves after education, and after experiencing both positive and negative experiences. Positive experiences in strategy development seems to increase self-efficacy. Negative experiences may improve one's abilities, but may also decrease their self-efficacy.

Good leadership may be defined as understanding and finding comfort that leadership is dynamic; leaders must lead without the necessity for titles; leaders must be able to connect with the organization's mission, be supportive of employee development, and provide opportunities to contribute to servitude (Miller, 2015). This is in contrast to inferior leadership that occurs when leaders exhibit behaviors that are associated with harmful consequences for followers and organizations (Stanley & Stanley, 2017). Bennis and Nanus (1985) detailed the core elements of leadership to include: maintaining organizational progression, translation of goals into practice, strategic planning, and ensuring supportive actions. More recently, Robbins (2000) believed leadership is defined as the ability to influence the members of an organization to achieve a vision or goal. Desired leadership dynamics transpire when leaders and subordinates collaborate to create a product that is greater than the sum of the parts (Hsieh & Tai, 2020).

Another challenge in leadership is to determine how to best support future leaders in leadership roles in industry (Roberts et al., 2016). Leaders play a vital function in the production of future leaders (Buttenschon, 2016). Good leaders cultivate good leaders (Buttenschon, 2016) through a development process based on education, and the contrary is true regarding poor leadership. Good leadership has a trickle-down effect. Future leaders learn how to lead, and how

not to lead, from current leaders. One of the keys to the assurance of a successful leadership pipeline is to support leadership through the development of abilities, motivation, and inspiration (Bobade & Kharghar, n.d.). It is the dispersal of information and knowledge throughout an organization that best promotes rapid and effective decision making (Allio, 2015). As adult learners advance through the adult stages in life, they tend to focus on developmental tasks that allow them to fill social roles (Knowles, 1984). In the fire industry, succession plans are imperative to the development and maintenance of fire service leadership. Younger firefighters develop their skills that benefit them more immediately, like mastering very specific firefighting tasks. They do not often engage in officer-level training. When a firefighter starts to move up in rank, they tend to learn the next position. Fire leaders are groomed from previous leaders. In the fire service, much like the military, chain of command is strictly adopted and adhered. Younger firefighters are often omitted from discussions that are held by more senior ranks. Important information will get funneled down to subordinates, but much information is withheld. These are more reasons that stirred surprise within the researcher regarding the findings.

Each firefighter has specific roles and responsibilities. Each firefighter role, and subsequent responsibilities, are determined either immediately, before the start of shift, or as one of the first objectives. Operational delegation may include resultant roles and responsibilities such as: what apparatus each firefighter occupies, their responsibilities within the apparatus team, and their precise fireground responsibilities. Top fire leaders, such as battalion chiefs, may provide an operational matrix. Fire company officers, such as captains, lieutenants, and sergeants, provide further operational leadership that are customized to accommodate daily functions.

There are many potential links between adult learning theory (Knowles, 1984) and leadership development. Adults are motivated to engage in educational undertakings for three main reasons, that include: goal-achievement, socialization, and/or to seek knowledge to satisfy curiosity (Khattab & Wong, 2018). Goals are imperative in the fire service. Such goals may include educational goals, safety goals, detailed chronological goals, and operational tactics goals. Fire leaders are the ones that are tasked with finding, examining, organizing, and deploying such goals.

One would think that a fire officer with a greater pertinent array of experience should find greater success in achieving goals. This was the understanding of the researcher prior to this research study. A main contributing factor in Bandura et al.'s (1977) theory of what leads to leadership self-efficacy are vicarious experiences. This is a concept that leaders may consider when determining if they have found success in their own experiences. When leaders determine if they are successful, they consider the task's difficulty as well as how others have fared under similar circumstances (Bandura, 1997). So, vicarious experiences are quite subjective to a person's personal experience and obtained information. Under this construct and under similar circumstances, a big fish in a small pond would have achieved a greater level of leadership self-efficacy than a comparably sized fish in a larger pond. As younger firefighters gain personal and professional capital, they more resemble a larger fish in the smaller pond. According to Bandura (1997), this would increase their self-efficacy. Conversely, younger and less experienced fire officers, who may more resemble a smaller fish in a larger pond, may have their self-efficacy diminished.

It is also important to note that the quantity and quality of experience in years does not necessarily equate to a certain number of formative successful life experiences, as years of

experience is an objective indicator that does not necessarily provide an evaluative, and easily measurable element (Bandura, 1997). The number of influential life experiences cannot be determined simply by a leader's experience in unit time. Experience in the fire service is random. Some firefighters will not get their first fire until they have accrued much time in experience, whereas, some get good experience from the very onset of employment. The same can be stated regarding fire officers. This cannot be anticipated. This study contrasted fire officers (Training) with a much greater number of years of experience than the non-officers (No Training). The results showed that, even though the ones who have experienced the treatment had many more years of experience than the control group, the difference in degrees of self-efficacy are not statistically significant.

Some researchers believe that it is through experiential learning that provides the greatest, concrete model for knowledge retention, as opposed to simple didactive education (Arghode, 2013). Many firefighters possess different skillsets, knowledge, wisdom, and applicational skills. Many firefighters enter the industry having already possessed an understanding of the industry, specifically the dynamics and practices. One reason for this may be the legacy element in the industry. This may be more prevalent in the firefighting industry than in any other industry. Many firefighters were inspired to enter the industry from previous family members who have paved the way. Many firefighters are second-generation firefighters. Many of those have part of a multigenerational dynamic of firefighting in the family. Due to these dynamics, firefighters who enter the industry are usually well prepared and conditioned for much of what the research instrument measured – the essential concept of self-efficacy in leadership.

There are many potential sources of attaining high levels of self-efficacy. These individual sources are minimally necessary to attain effective levels of leadership. Such potential sources of self-efficacy include the mastery of experiences, vicarious models from social models, social persuasion, and enhancing positive self-beliefs while minimizing negative ones (Bandura, 2010). Vicarious models of leadership are an important element in the birth and development of a leader. Offspring learn from parents. Parents are more apt to share topics of which they have reached a higher confidence level of understanding than of less-understood topics. If a parent is a confident firefighter, they may tend to adopt the role of a social model, providing social persuasion through sharing of their experiences.

Firefighters are involved in a very unique dynamic that may lead to their respective conditioning. In many industries, it may be satisfactory to defer to someone else or procrastinate and suspend operations to another time. In emergency industries, sound resolutions need to hastily occur in present time, since others' lives may depend upon a successfully, well thought out and executed plan and operation. Firefighters may be called crisis mitigators. From the very onset of employment, firefighters must adopt the mindset that they have to find resolutions to other people's problems. Every crisis experienced by someone in the care of the fire department must have a sound resolution. Even young firefighters must possess this capability that there is no quitting.

Individuals' self-efficacy is individuals' beliefs (e.g., how they feel, think, and where their behavior can be explained through motivation) that they are capable of achieving certain goals (Bandura, 1997). Motivated learners usually possess the ability to lessen the many potential challenges to learning (Arghode et al., 2017). Not only is self-efficacy the belief in oneself, but also the confidence that they are able to conquer presented challenges (Ghadiri et al.,

2018). One of the challenges is to determine the levels of self-efficacy for each individual, identify what can promote self-efficacy of the individuals, and how the strategy may be orchestrated. Measurements of progress are some elements that may be used for improvement. The same can be said regarding self-efficacy.

Many firefighters enter the industry to be placed in a position to meet challenges directly. They want to be the ones to make the difference in individuals' lives. Even new firefighters possess this motivation. In many cases, new firefighters have a greater desire for making a difference and care of citizens than more senior firefighters. This motivation leads to improved progression of skills to ensure preparation for inevitable future emergent situations.

Fire officers should possess a greater degree of self-efficacy than younger firefighters. This is due to the fact that more senior firefighters possess greater experience and training with providing direction, personnel selection, team building, and operational oversee and management. Fire officers occupy positions that require the satisfaction of the aforementioned on a sometimes-hourly basis, and such activities should almost attain the degree of second-nature.

Any single leadership behavior or decision affects and changes the course of the entire organization (Hsieh & Tai, 2020). In order for an organization to experience opportunistic operational outcomes, effective leadership is essential (Hsieh & Tai, 2020). The transition of becoming a leader to *being* a leader generates leaders' self-actualization (Maslow & Lewis, 1987), who in part finds authority, strength, and success (Greenleaf, 1996; Russell, 2016b; Sendjaya, 2015).

Newly hired firefighters possess a comprehensive understanding of what the vocation details. This is supported by the many hours of mandatory experiential learning built into the pre-employment certification requirements. New hires possess an understanding that firefighters

must work in well-organized teams to mitigate confronted challenges. This element is first developed no later than in pre-employment certification classes and continues to develop throughout the respected careers till the date of retirement.

Fire officers must possess an exceptional ability to effectively evaluate crews and situations. One of the responsibilities of fire officers is to perform the evaluation of subordinates. Evaluation is essential to determine where one stands, and the projection of one's future. The purpose of fire performance evaluations is to measure the extent of the performance of employees to formulate progressive courses of action to provide essential benefits to both the individual, and subsequently to the organization (Irawati, 2020). Performance evaluations are essential to fire departments in order to determine abilities, goal acceptance, goal achievement, and to determine corrective, formative methods (Irawati, 2020).

Throughout pre-employment studies, candidates are in a constant state of evaluation. They are constantly being evaluated by educators and potential future employers in didactic and psychomotor clinical studies. They are also constantly learning to evaluate situations and how to evaluate ones who are in their temporary care – citizens and ones who enter the municipality borders.

When considering the research findings of this study, there is no significant difference in the final self-efficacy scores between ones who have experienced the training (fire officers) and ones who have not experienced the training (non-fire officers). This study examined the final self-efficacy scores of each participant's responses to the survey. If further examination of survey subcategories were examined, the researcher believes that the findings would show that fire officers possess greater self-efficacy in some subcategories, while non-officers possesses a greater degree of self-efficacy in other subcategories. It is believed by the researcher that such

scores, when averaged, results in similar means. When all of the scores of the subcategories are added together, the end result showed no significant difference.

Self-efficacy Theory

Perceived self-efficacy is defined as individuals' beliefs about their own capabilities to produce their desired levels of performance that influences particular events that affects their lives (Bandura, 2010). Self-efficacy theory brings to understanding how individuals' perceived self-efficacy empowers them to employ control over the quality of their personal performance in order to control the course of their respective lives through successful management (Bandura, 2006). The belief in oneself (self-efficacy) contributes to a person's interpretation of their capabilities and leads to their eventual successes in life (Bandura, 2010).

Individuals who seek higher self-efficacy tend to pursue challenges, elevate their skills and performance to overcome their encounters, quickly recover from setbacks, attribute failure to the lack of received knowledge or skill, and are strongly committed (Bandura, 2010). Individuals with low self-efficacy tend to avoid challenging endeavors, whereas people with high self-efficacy tend to consider challenges as tasks that they have the opportunity to overcome and master (Bandura, 2010).

Individuals with low self-efficacy usually do not enter first responder industries, such as firefighting. In the fire industry, there is no quit. If firefighters originally do not possess such mindset, they need to adopt the approach of finding a solution, because dire situations are in absolute demand of the best possible solution. According to Bandura and Locke (2003), self-efficacy is rooted in the fundamental conviction that the individual has the aptitude to conquer the current presented challenges; otherwise, there would be little incentive to actually attempt to

overcome such challenges. This would explain why high-level firefighters enjoy challenges, similar to how high-level athletes enjoy high-level competition.

Self-efficacy is a trend that usually takes one of two routes. Either it continues down the road of unresolved ventures or it serves the possessor well and escorts them to new heights. Self-efficacy is this strength that does not just support the attacking of initial challenges, but the increased interest and continued and developed steadfastness to progress one's related abilities (Bandura, 2010). Individuals who do not believe in their capabilities from previous experiences affects their actions and are less apt to undertake difficult challenges and persevere when times become difficult (Bandura, 1997). Individuals who consider entering an industry that is based on quick and mistake-free decision-making usually do not have many issues with self-efficacy.

Self-efficacy theory states that individuals with higher degrees of self-efficacy have increased abilities to exert control over themselves, their circumstances, and their respective environments (Bandura, 1977). This is consistent with the findings because even less experienced firefighters need to possess these qualities. Individuals in emergent fields, such as firefighting, will not find long-standing success if they do not soon master influence over themselves, their circumstances, and their respective environments.

Social Cognitive Theory

Social cognitive theory and self-efficacy theory both share some overlap and both assist in the comprehension of learning and development. According to social cognitive theory, it is the tool of self-efficacy that best contributes to the application of learned knowledge to new situations and overcome challenges (Seibert et al., 2017). Social cognitive theory explains how firefighters learn through emulating behaviors and reactions to outside stimuli that warrants a reactive response to lead in times of emergency (Bandura, 1971). Through fire officer training,

prospective fire officers are drilled in fireground tactics. This cognitive training prepares eventual fire officers to provide leadership response to fire service-related issues and provide the who, what, when, where, why, and how to mitigate such issues.

Social cognitive theory (Bandura, 1986) is the idea that humans learn through social means. It rationalizes learning through experiencing outside stimuli, evaluating such processes, collecting ideas, forming opinions, and using found perspectives to make decisions and influence the outside world (Bandura, 1971). This is consistent with the findings when the multi-generational legacy element is considered. The Sterling Heights Fire Department (one of two considered fire departments in this study) currently employs many children of former firefighters. Children learn from their parents or caregivers. If a parent finds success in a certain area, then the children may acquire such skills through social interaction and learning.

Adult Learning Theory

Malcolm Knowles, the father of adult learning (Celli & Young, 2017), popularized the study of andragogy, or the facilitated and developmental processes that assist adult learning (Knowles, 1978). Adult learning theory details how adults learn (andragogy), and how it is different from how children learn (pedagogy). Knowles detailed four principles of andragogy, that includes: the need for adults to be involved in the planning and evaluation of their instruction, experience (whether perceived successes or perceived failures) provides the basis for learning activities, adults are more concerned with learning material that is of immediate relevance that they may be able to utilize to support their needs and their wants in the proximate future, and adults advance learning from content-centered to problem-centered philosophies (Knowles, 1984). One of the responsibilities of fire officers and upcoming fire officers is to determine, design, and deliver fire-related trainings. They are responsible for their own training,

as well as the training of their crews. Adult learners who are responsible for what and when they learn are able to progress their personal learning greater than when someone else chooses the material or topic (Arghode et al., 2017).

Adult learning theory states that adults who have control over their education tend to have improved results (Knowles, 1984). This is consistent with the findings because firefighting and EMS education is adult education, and education in support of these industries is derived from vocational-type schooling. Almost all material from this education is pertinent to success in the field and is of immediate relevance, unlike a liberal arts education that is focused on a more balanced education. When new firefighters enter the industry, they are tasked with being their own advocate for accomplishments and must develop personal and academic agency to ensure and maximize their success.

Implications

As previously detailed, there is a dearth of information and research findings regarding fire officer training. There is no research that examined and studied this specific training modality. So, much of the implications section is grounded in theoretical support with the inclusion of practicality. The hope of this researcher is that this study added to the existing body of knowledge and theory, advanced fire service education understanding, and that it made this world a better place by providing further understanding of self-efficacy related to fire service leadership education.

The first implication of this study relates to self-efficacy and the contributing factors, attributes, and characteristics that lead to increased self-efficacy. This study further instills and progresses the theoretical concept of self-efficacy. Self-efficacy contributes to a person's interpretation of their capabilities and leads to their eventual successes in life (Bandura, 2010).

This study satisfies this through examination of perceived self-efficacy empowerment related to the ability of individuals to employ control over the quality of their personal performance in order to control the course of their respective lives through successful management (Bandura & Bandura, 2006). Formal development programs have shown to contribute to leadership self-efficacy (McCauley et al., 1994, 2010), but according to these findings, there is no significant difference between the two groups of participants' perceived confidence in their management that directly leads to improved personal and group performance.

The second implication examines the complex subject of experience. There have been many studies from varying industries that support the positive link between experience and self-efficacy (Bandura et al., 1977; Pfitzner-Eden, 2016; Seibert et al., 2017). According to Bandura et al. (1977), the greatest contributing factor that leads to leadership self-efficacy is mastery experiences. According to the findings of this study, there was no obvious link between experience and self-efficacy. The following will provide further illustration to the potential reasoning.

Our previous experience may benefit us, but it may also hurt us. Just as important to leadership self-efficacy as fortunate experiences, negative experiences are especially detrimental to development (Bandura, 1997). Each positive experience (perceived success and sense of accomplishment) propels us toward a greater level of self-efficacy, whereas a negative experience (perceived failure and sense of defeat) yields a negative trajectory. One reason why this study has shown that less experienced firefighters' self-efficacy is similar to that of much more experienced fire officers, is that the experiences may cancel each other out. A positive vector of a magnitude added to an opposite vector of the same magnitude equals zero. Firefighters are exposed to many extremely negative and unfortunate events. It is probable that

negative experiences have a negative effect on self-efficacy. Fire officers, who are usually more experienced firefighters, have experienced many more negative events than less senior firefighters. A greater number of negative experiences usually includes more considerably destructive psychologically traumatic events. This effects a person in a negative fashion, that may include areas such as learning, retention, computing, rest, sleep, rejuvenation, and mood. Further psychological support modalities need to be established to best protect firefighters and maximize their positive potential.

Experiences encompass great value, even though learning in this fashion progresses at a slower pace (Arghode & Wang, 2016); however, evidence suggests that learning through this process supports greater retention when compared to merely cognitive instruction (Arghode, 2013). According to Bandura et al. (1977), the first mentioned, and greatest contributing factor that leads to leadership self-efficacy is mastery experiences. This is because our mastery experiences are the greatest authentic indicators of an individual's capabilities and capacity (Pfitzner-Eden, 2016). Blue Card training (i.e., the chosen fire officer training modality in this study) has been deployed starting with higher-ranking fire officers to the lower ones. The higher-ranking firefighters are usually in such positions for reasons. A department that bases their promotions by seniority have more senior individuals in place of leadership. In this dynamic, all firefighters of higher rank have greater seniority. Odds are that the ones with greater seniority possess a greater number of experiences and a greater chance of mastering such experiences. In a system that bases their promotions on testing (having prospective fire officers undergo a multi-faceted testing process), the ones who test better are in positions of leadership. Because new fire officers do not have experience in fire leadership, leadership self-efficacy may not have a chance

to develop. With this said, fire officer education plays an immense role in the development of leadership self-efficacy, thus early success of fire officers.

The third implication regards the management of fire service employees. In the fire service, higher rank and higher seniority traditionally warrants greater reverence. In the para-militaristic industry of firefighting, new firefighters are not normally considered reputable until they accrue a few years of experience.

There are many ranks in the fire service. At the SHFD, one begins their firefighting journey as a tailboard firefighter. This is someone who is usually the 'worker bee' in the crew. After some years of experience, a fire engine operator (FEO, fire engineer, or apparatus driver) promotion may become available. The next step in the natural progression is to the rank of fire service officer. Once firefighters are promoted to a new position, it may take time to become accustomed to the rigors, nuances, and requirements of such position.

Successful managers support leadership by utilizing a developmental process of abilities, motivation, and inspiration (Bobade & Kharghar, n.d.). Being that new non-fire officers do not have much experience in fire leadership, one would think that leadership self-efficacy may not have a chance to develop. With this said, it seems that this particular fire officer education modality may not play a significant role in the development of leadership self-efficacy in firefighters.

Even young and inexperienced firefighters possess a certain set of skills. Performing the necessary actions of a successful fire service officer requires a significant skillset. While it takes an extraordinary individual to enter the industry of firefighting, much less become a successful fire service officer. It takes a special person to have the desire, complete the necessary training, be offered employment, and succeed in the fire service. Also, experience may benefit the

individual, but it may also be detrimental (Bandura, 1997). Being that becoming and maintaining success in the fire service requires such an individual who possesses the aforementioned characteristics and are dedicated individuals who have shown to have a high degree of self-efficacy, there is no surprise that even less experienced non-officers exhibit such a high degree of self-efficacy to where there is no significant difference between the self-efficacy scores of fire officers and non-fire officers.

Considering the aforementioned implications and research findings, maybe new hires and less senior firefighters should be more valued and be given more of a voice when it comes to operations and daily processes, as results from this study shows that confidence levels between fire officers and non-fire officers are quite similar. Such responsibilities could include daily tasks and schedules, training modalities, and other elements of leadership. Contrarily, this study does not seek to determine if firefighters' self-efficacy is warranted. There are many confident people in this world. Not every individual's self-efficacy matches their personal capabilities.

A fourth implication involves the progression/promotional dynamic within the fire service. Institutional progression is one of the core elemental functions of leadership (Bennis & Nanus, 1985). Fire officers have progressed through ranks to achieve their respective statuses. Even though ranks and positions in the fire service have different responsibilities, they all work toward a common goal. In a structure fire, the goal is the extinguish the fire. Each member has different responsibilities, but the end goal is similar in nature. Being that leadership tactics are understood by all may assist in the development of self-efficacy. This explains that the fire service progression dynamic supports firefighter self-efficacy. So, fire service leaders have found a successful model for cultivating firefighter self-efficacy, but should build upon such model, and keep an open mind for other potential training modalities to maximize results.

The fifth implication of this study focuses on the training modality (independent variable) considered in this study and the future of fire officer training modalities. Leadership self-efficacy contributes to improved organizational operations with significant implications for current and future leadership development (Rehm & Selznick, 2019). Regarding fire officer leadership development training, it is a considerable financial commitment. Such commitment includes program costs, time off-duty, overtime to replenish vacated positions due to firefighters engaged in the modality, as well as other financial commitments. Empirical research of other fire officer training modalities should be considered to determine their effectiveness to best equip firefighters by cultivating their self-efficacy. If the findings from this study detail that no significant difference exists between participants who have taken the training and participants who have not taken the training, maybe other fire officer training modalities need to be considered to best support the people who support us.

While it is important to note that results from a single study should not be used to prove or disprove sound findings from established theories and previously conducted empirical studies (Gall et al., 2007), findings from this study should not be diminished or discounted. This study added to the existing body of knowledge of fire officer education and will contribute to improvement of conditions in all capacities within the fire service, as well as contribute to the end goal - provide improved care to the citizens in which firefighters vow to serve and protect.

Limitations

Some of the limitations of this study include: a limited participation pool, utilization of only two fire departments, limited statistical methods utilized in the testing of the hypothesis for comparison of means between groups, and the unique dynamic in the firefighting industry. The total number of participants sampled was 100. According to Gall et al. (2007), 100 students is the

required minimum for a medium effect size with statistical power of .7 at the .05 α level. While the minimum number of participants was satisfied, a greater number of representation usually results in a stronger study.

The participants of this study were exclusively derived from two single fire departments. Certain fire departments across the world are comprised of different cultures. Some fire departments may hold a certain attribute at a higher regard than other fire departments. The inclusion of other diverse participants in departments from across the country, and even throughout the world, would strengthen this study.

Due to the need of possessing a minimum number of participants for testing of the hypothesis for comparison of means between groups and the researcher struggling in the SARS-CoV-2 (COVID) pandemic to procure participants, this study was limited to a *t* test. It would behoove the fire leadership industry to conduct similar research utilizing ANCOVA and multiple regression tests. ANCOVA would provide additional information regarding one independent variable in time while minimizing for initial group differences. Multiple regression would have the potential to more accurately understand association of each individual influence to the result.

Recommendations for Future Research

As previously stated, the participants of this study were exclusively derived from two fire departments from two specific regions of the United States. To best determine if this certain fire officer training modality increases perceived self-efficacy levels in fire officers, then a nationwide, and potentially a worldwide, study should be performed. It is important to note that this was just one type of fire officer training in a world of many potential trainings that fire officers undertake. In order to determine the best possible fire officer training modality relating to what provides the greatest increase in perceived self-efficacy in fire officers, a study should be

performed of many more participants, of many more fire departments, across a vast area, including a more diverse set of participants.

The training modality should also be further examined. An empirical research study should be performed to further assess the training modality's effectiveness. ANCOVA and multiple regression should be considered as the analyses of choice. ANCOVA would support analysis of many elements while considering the potential covariate of experience. Multiple regression would allow the analysis of multiple dependent variables. Performance of such analysis would maximize the effectiveness of knowledge obtainment to best support fire service officer education.

Fire department employees are the greatest resources of the department. Self-efficacy is such an important characteristic of fire service leaders. Fire department leadership needs to examine and deploy the most effective training modalities to maximize the progression of their respective employees. Empirical research of other fire officer training modalities should also be considered to determine their effectiveness to best equip fire service leaders in deciding which fire officer education modality would best suit their municipality.

Upon completion and considering an assessment of the study's research methods, findings, and implications, it was found that there are a few recommendations for future research that include conducting similar studies. Researchers could conduct a similar quasi-experimental study with interval-level assessments that examines perceived self-efficacy scores at the onset of the training modality compared to the perceived self-efficacy scores at the conclusion of the training utilizing an ANCOVA. Another quasi-experimental study could be conducted which includes distinctive and diverse demographics, such as different participant pools, larger pools, and separated into gender, experience, previous trainings, departmental emergency call volumes,

and attained formal education. Researchers could also conduct a very similar study to this study, but one that provides further examination into the subcategory scores to determine if fire officers possess greater self-efficacy than non-officers in certain categories, and vice versa. Conduct a qualitative study that focuses on the motivations of fire service officers, the needs of fire service officers concerning education, experiences of each fire officer participant, and the attitudes of each fire officer. This study would provide considerably more flexibility and would not be bound by potential limitations of quantitative research methods. Conduct any of the aforementioned studies to examine other training modalities.

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APPENDICES

Appendix A: Instrument – Leadership Self-Efficacy Scale

(Bobbio & Manganelli, 2009)

Starting and leading change processes in groups

Starting and leading change processes in groups

1) I am able to set a new direction for a group, if the one currently taken does not seem correct to me.

   1 2 3 4 5 6 7

2) I can usually change the attitudes and behaviors of group members if they do not meet group objectives.

   1 2 3 4 5 6 7

3) I am able to change things in a group even if they are not completely under my control.

   1 2 3 4 5 6 7

Choosing effective followers and delegating responsibilities

4) I am confident in my ability to choose group members in order to build up an effective and efficient team.

   1 2 3 4 5 6 7

5) I am able to optimally share out the work between the members of a group to get the best results.

   1 2 3 4 5 6 7

6) I would be able to delegate the task of accomplishing specific goals to other group members.

   1 2 3 4 5 6 7

7) I am usually able to understand to whom, within a group, it is better to delegate specific tasks.

1 2 3 4 5 6 7

Building and managing interpersonal relationships within the group

8) Usually, I can establish very good relationships with the people I work with.

1 2 3 4 5 6 7

9) I am sure I can communicate with others, going straight to the heart of the matter.

1 2 3 4 5 6 7

10) I can successfully manage relationship with all the members of a group.

1 2 3 4 5 6 7

Showing self-awareness and self-confidence

11) I can identify my strengths and weaknesses.

1 2 3 4 5 6 7

12) I am confident in my ability to get things done.

1 2 3 4 5 6 7

13) I always know how to get the best out of the situations I find myself in.

1 2 3 4 5 6 7

14) With my experience and competence I can help group members to reach the group's targets.

1 2 3 4 5 6 7

15) As a leader, I am usually able to affirm my beliefs and values.

1 2 3 4 5 6 7

Motivating people

16) With my example, I am sure I can motivate the members of a group.

1 2 3 4 5 6 7

17) I can usually motivate group members and arouse their enthusiasm when I start a new project.

1 2 3 4 5 6 7

18) I am able to motivate and give opportunities to any group member in the exercise of his-her tasks or functions.

1 2 3 4 5 6 7

Gaining consensus of group members

19) I can usually make the people I work with appreciate me.

1 2 3 4 5 6 7

20) I am sure I can gain the consensus of group members.

1 2 3 4 5 6 7

21) I can usually lead a group with the consensus of all members.

1 2 3 4 5 6 7

Have you completed Blue Card training?

Yes

No

Are you a fire officer?

Yes

No

Years of experience

0-5

6-10

11-15

16+

Appendix B: Survey Informational Sheet for Participants and Participant Consent Form

Consent

Title of the Project: The Effect of Satisfying the Requirements for Fire Officer School on Leadership Self-Efficacy Among Fire Service Officers
Principal Investigator: Thomas J. Grady III, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18 years of age, a fire service officer or a prospective fire service officer, and member of the HFD. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of this research study was to determine if a statistically significant difference exists in fire officer leadership self-efficacy of officers who have attended fire officer training school and those who have not attended fire officer school. The intention is to provide a means of analysis to determine the effectiveness of fire officer education.

What will happen if you take part in this study?

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

1. Initial emails will be sent per Survey Monkey to the Regional Training Officer of the HFD to distribute to the participants. The emails will include two links. All participants within this study who completed fire officer school will complete the survey upon the completion of fire officer school. All fire officers from the respective departments who choose to participate this research study will be invited and utilized.
2. Following the completion of each respective participants' fire officers simulation laboratory associated with the didactic education, another email will be sent for completion of the same exact survey for summative and comparative purposes.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

The benefits to society include the contribution of data to the betterment and development of fire service officers in the fire service.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life, and may only include the devotion of time.

How will personal information be protected?

The records of this study will be kept private. The data will be used, but there will not be personal identifiers attached to the survey. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. All participant responses will be kept anonymous. The received data will be stored in Survey Monkey, as well as the researcher's password-

protected personal data storage drives. When the data are finished being collected, the Survey Monkey files will be suspended, but the data will remain on the password-protected researcher's data storage drives, and may be utilized future presentations. Data should be retained for three years upon completion of the study. After three years, all electronic records will be deleted.

How will you be compensated for being part of the study?

Participants will not be compensated for participating in this study.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or Blue Card. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Thomas J. Grady III. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at (xxx) xxx-xxxx or at xxxxxxx@live.com. You may also contact the researcher's faculty sponsor, Dr. Nelson at xxxxxx@liberty.edu.

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of the document for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

_____
Printed Subject Name

_____
Signature & Date

Appendix C: Copy of Emailed Permissioned Use of the Instrument

Leadership Self-Efficacy Scale (Bobbio & Manganelli, 2009)

Dear Mr. Grady III,

Thank you for the kind e-mail and the interest you seem to have in the tentative work I did on Leadership Self-Efficacy (LSE) several years ago.

Even if we are not working extensively on this issue now, we -my co-author and I- have still in mind the issue of improving the items' wording and we are also collecting data in order to refine the measure that was published in 2009 (based on data collected about four years before, that is around 2005) -in what I now would call its very first version- on the manuscript you came across.
A new round of longitudinal data collection was closed some time ago; however, so far we haven't found the time to look into them...

Let me say that I have received several emails from both students, scholars and practitioners, interested in collecting data with the scale and/or in applying it within training courses or similar academic experiences. At present, I have knowledge of a few published studies which used the scale. However, so far the scale has been used for non-profit research aims, and this is ok to me.

In attachment you can find the new 21 items of the Leadership Self-Efficacy scale (LSE) version 4.0 (updated to 2016!), so that you can have an idea of what it is right now, of the main results we got on the 2009 paper (that is with the LSE version 1.0, which is still copyrighted by TPM: www.tpmap.org) and in some subsequent unpublished studies, and also deduce some (hopefully useful) information for your interest in research and/or application.
The English translation was checked with a native English speaker, therefore you will also find the items in Italian.

In sum, every time we administered the LSE it seemed to work quite well; usually we prefer to compute a general LSE score by summing/averaging the scores of all the 21 items, instead of calculating 6 separate composite scores, that is the scores of the 6 factors/dimensions which are supposed to constitute this scale. In fact, using one score was simpler, parsimonious and fitted well with our research purposes.

In case you would decide to use all or some of the items of the LSE 4.0, for scientific purposes or else, we could discuss the more appropriate way to do it (i.e., the reference could be both the 2014 unpublished research report I am sending to you, and the 2009 paper. The LSE 4.0 is a modified version of the scale published in 2009, that is still copyrighted by the publishing company who prints the TPM Journal, etc.).
Just to be clear: I am not in the condition to grant permission for using this instrument (i.e., particularly the 2009 version, but also the LSE 4.0) for profit activities, and, right now, I am not interested in it.

Please, let me know additional details on what you are going to do.

Finally, before making any other further steps or decisions, if I may, I would strongly recommend you to read at least the following papers, that I found very inspiring and extremely valuable at that time, where you can also find sample items of shorter and reliable LSE or SE scales (particularly n. 2, 4 and 5) that could be handy for your aims. Perhaps, the scales included in these studies could have been subsequently used by other researchers.

1) Anderson et al. (2008). A leadership self-efficacy taxonomy and its relation to effective leadership. *Leadership Quarterly*, *19*(5), 595-608.

2) Chemers et al. (2000). Dispositional affect and leader effectiveness: A comparison of self-esteem, optimism, and efficacy. *Personality and Social Psychology Bulletin*, *26*, 267-277.

3) Hannah et al. (2008). Leadership efficacy: Review and future directions. *Leadership Quarterly*, *19*(6), 669-692.

4) Ng et al. (2008). Personality and leader effectiveness: A moderated mediation model of leadership self-efficacy, job demands, and job autonomy. *Journal of Applied Psychology*, *93*, 733-743.

5) Paglis, L. L., & Green, S. G. (2002). Leadership self-efficacy and managers' motivation for leading change. *Journal of Organizational Behavior*, *23*, 215-235.

Please, confirm that you received the attached file correctly and feel free to get back to me if you think I could be of any help and/or if you want to discuss any aspect of the instrument.
Of course, comments and criticism are more than welcome.
I look forward to hearing from you and, if I may, good luck with your research effort and stay safe.
Best Regards.

Andrea Bobbio

Appendix D: IRB Approval

Date: 1-13-2023

IRB #: IRB-FY21-22-745
Title: THE EFFECT OF SATISFYING THE REQUIREMENTS FOR FIRE OFFICER SCHOOL ON LEADERSHIP SELF-EFFICACY AMONG FIRE SERVICE OFFICERS
Creation Date: 2-10-2022
End Date:
Status: Approved
Principal Investigator: Thomas Grady
Review Board: Research Ethics Office
Sponsor:

Study History

Submission Type Initial	Review Type Exempt	Decision Exempt
Submission Type Modification	Review Type Exempt	Decision Exempt

Key Study Contacts

Member Timothy Nelson	Role Co-Principal Investigator	Contact [redacted]
Member Thomas Grady	Role Principal Investigator	Contact
Member Thomas Grady	Role Primary Contact	Contact

Appendix E: Copies of Emailed Invitations for Participant Involvement

Letter to the Sterling Heights Fire Department

2/14/22

Steve Kohut
SHFD Chief of Training
SHFD
xxxxxx xxxx xx
xxxxxxxx, xxx xxxxx

Dear Chief Kohut,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a Ph.D. degree. The purpose of my research is to examine self-efficacy levels of fire service officers, and I am writing to invite eligible participants to join my study.

Participants must be 18 years of age or older, fire service officers who have recently taken Blue Card, and prospective fire service officers or firefighters close to the officer level who have not taken Blue Card. Participants, if willing, will be asked to sign a consent form and complete a Survey Monkey survey. It should take approximately 5 minutes to complete the procedures listed. Participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, please click the first link if you are a fire officer who has completed Blue Card training, or choose the second link if you have not yet finished Blue Card training.

For officers:
https://www.surveymonkey.com/r/WDCD3SV

For non-officers:
https://www.surveymonkey.com/r/2B6WDQ5)

Contact me at (xxx) xxx-xxxx

A consent document is provided as the first page of the survey. The consent document contains additional information about my research. After you have read the consent form, please click the button to proceed to the survey. Doing so will indicate that you have read the consent information and would like to take part in the survey.

Sincerely,

Thomas J Grady III
Sterling Heights Fire Lieutenant (Local 1557) and Ph.D. candidate
(xxx) xxx-xxxx xxxxxx@liberty.edu

Letter to the Houston Fire Department

2/12/22

Jeffery King
Professional Development, Lead Instructor
B-Shifter
xxxxxxxxxxxxx
xxxxxx, xx xxxxxx

Dear Jeffery King,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a Ph.D. degree. The purpose of my research is to examine self-efficacy levels of fire service officers, and I am writing to invite eligible participants to join my study.

Participants must be 18 years of age or older and either fire officers or prospective fire officers. Participants, if willing, will be asked to complete a SurveyMonkey survey. It should take approximately 5 minutes to complete the survey. Participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, please click the first link if you are a fire officer who has completed Blue Card training, or choose the second link if you have not yet finished Blue Card training.

For officers:
https://www.surveymonkey.com/r/WDCD3SV

For non-officers:
https://www.surveymonkey.com/r/2B6WDQ5)

Contact me at (xxx) xxx-xxxx if you have any questions.

A consent document is attached to this email and will be provided as the first page of the survey. The consent document contains additional information about my research. After you have read the consent form, please click the button to proceed to the survey. Doing so will indicate that you have read the consent information and would like to take part in the survey.

Sincerely,

Thomas J Grady III
Sterling Heights Fire Lieutenant (Local 1557) and Ph.D. candidate
(xxx) xxx-xxxx
xxxxxxx@liberty.edu