

THE EFFECTS OF ACTIVE SHOOTER RESILIENCE TRAINING PROGRAMS ON
COLLEGE STUDENTS' PERCEPTIONS OF PERSONAL SAFETY

by

George Matthew Snyder
Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University, Lynchburg, VA

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ABSTRACT

The effects of active shooter resilience training programs on university students' perceptions of personal safety should be understood through evidenced-based research. A quasi-experimental post-test only control-group design study was conducted to assess this potentially lifesaving educational activity. A convenience sample of 136 randomly assigned undergraduate students at a large private university participated in the study. One group completed a U.S. Department of Homeland Security active shooter resilience training program, a second group completed a private active shooter resilience training program, a third group completed both training programs, and a fourth control group received no training before the assessment. The Student Perception of Personal Safety Survey measured students' sense of personal safety and self-preservation response strategies associated with targeted violence. Each training program was found to have a positive influence in at least one of the measured variables (safety, fear, and resilience). The analysis of two broadly diffused active shooter resilience training programs narrowed a considerable gap in evidence-based research. The positive resilience building influence of the studied training programs merits further research at the primary, secondary, and higher education levels. Persistent active shooter events suggest a need for greater urgency among educational leaders, policy makers, and public safety leaders to implement training programs that build resilience. Effective training, such as the programs examined in this study, may limit the lethality of future attacks.

Keywords: active shooter, hybrid targeted violence, resilience, campus safety

DEDICATION

This dissertation is dedicated to my wife Rebecca Elizabeth Snyder for her steadfast support, patience, and encouragement. I thank God for joining us together so that we could share a lifetime of Faith, Hope, and Love.

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I thank God for revealing Liberty University and the Doctorate in Education program as a path for me to contribute at higher levels to advance His plan. The completion of this degree has been the equivalent of running an uphill marathon. I appreciate that the finish line is really just a starting line as higher education begets much higher expectations.

I thank Dr. David E. Holder, my committee chair, for his steadfast support, Socratic guidance, and friendship. The scrutiny and support of my committee members, Dr. Russell G. Yocum and Dr. James A. Swezey, strengthened the findings of this study and my resolve as a scholar. I thank Dr. Daniel W. Phillips III, Dr. Ellen Lowrie Black, Dr. Roger Mackey, Dr. David C. May, Dr. Heather Schoffstall, Dr. Loyd Uglow, Dr. Brian C. Yates, Denise Green, Tracy L. Frazzano, Randy Spivey, and Matthew Prager for their professional contributions to the research, analysis, and presentation of this dissertation. The advice and counsel of this esteemed group of experts played a vital role in the quality and validity of the final product. This group of professionals reinforced my firm belief that “iron sharpens iron, and one man sharpens another” (Proverbs 27:17).

Finally and most importantly, I thank my family for their love and support. My wife Rebecca and our daughters Emily, Kathryn, and Claire have sacrificed more than they will ever admit to allow me to achieve this academic milestone. I am eternally grateful to be blessed with a wife, children, and parents that live the Apostle’s Creed in word and deed. The completion of this degree will enable me to be a humble servant leader to them, our Church, and our community.

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CHAPTER ONE: INTRODUCTION

The purpose of this quasi-experimental designed study was to determine if there were differences in the attitudes of college students regarding their personal safety and resilience after participating in widely diffused active shooter resilience training programs. While active shooter events are statistically rare on college campuses, as are dormitory fires, these events require preventative measures to limit their potential harm when they do occur. Investments made in fire safety technology, training, and evacuation drills have built a level of resilience in students of all ages (Kapucu & Khosa, 2013). Similar resiliency benefits may be achieved by preparing university students to recognize, react to, and take appropriate actions when confronted with an act of targeted violence. The potential byproduct of resilient and educated students is a reduction in the lethality of future attacks in both on-campus and off-campus environments.

Background

Educational leaders have implemented a variety of strategies to develop more resilient communities to prevent or mitigate the harm that comes from targeted violence. These strategies include student educational programs, threat identification and assessment programs, and active shooter response training exercises for public safety officers (Fox, 2009). The federal government, the private sector, and academia have historically recognized a need to raise awareness of active shooter tactics and suggest response strategies to better prepare and protect potential victims from harm. According to Barbara Yagerman with the U.S. Department of Homeland Security (personal communication, April 15, 2013), interest in these education programs has grown with each incident of hybrid and conventional targeted violence. Randy Spivey, Chief Executive Officer of the Center for Personal Protection and Safety (CPPS), reiterated the demand for targeted violence training bolstered by the one million participants in

CPPS workplace and campus violence training programs (personal communication, July 22, 2013). The actual and perceived effectiveness of these education strategies is not well known due to a lack of formal practitioner and researcher scrutiny.

This study measured the influence of two independent, self-paced training programs. The first was the Department of Homeland Security's (DHS) "Active Shooter: What You Can Do" (2013) training program. The second training program was the Center for Personal Protection and Safety's (CPPS) "Shots Fired on Campus: When Lightning Strikes (Student Edition)" (2008). These types of training approaches were recommended by Commissioner Raymond Kelly in the New York City Police Department's "Active Shooter: Recommendations and Analysis for Risk Mitigation" report (Kelly, 2012, p. 3).

The NYPD report and its recommendations have gained considerable media, public, and practitioner attention as it includes findings related to recent high-casualty targeted violence events in Newtown, CT, Aurora, CO, Tucson, AZ, and Utoya, Norway (Kelly, 2012, p. iii). The April 15, 2013, Boston Marathon terrorist bombing and subsequent firearms and improvised explosive attacks involving two Massachusetts Institute of Technology students serve as additional contemporary examples of Hybrid Targeted Violence. Real-time global media coverage of the Boston attacks captured the attention of a large university community, a major American city, and the world (Urquhart, 2013).

This analysis of active shooter resilience training program efficacy narrows a considerable gap in the literature as it relates to publicly and commercially available active shooter resilience training programs that are purported to build resilience among vulnerable populations. The government and commercial training products studied are promoted and distributed by many universities as tools to increase the resilience of faculty, staff, and students.

A considerable amount of research is available on school safety, campus violence, human motivation, and adult learning theory applied to personal safety training. Heretofore, very little research has been available to assess training that may bolster student resilience when exposed to targeted violence and active shooter events.

Problem Statement

The problem addressed in this study was the lack of research regarding the influence prominent active shooter resilience training programs may have on the perceived resilience and active shooter response strategies of college students. A study conducted on psychological predictors after the 9/11 terrorist attacks defined resilience as “the process of, the capacity for, or outcome of successful adaptation despite challenging or threatening circumstances” (Butler, Koopman, & Azarow, 2009; Masten, Best, & Garmezy, 1990, p. 426). The DHS and CPPS training programs examined in this study were developed to fill gaps in the education and training of at-risk populations, thus attempting to build resilience. Educational leaders have directed students to participate in these free and subscription-based programs under the assumption that they are effective. Prior to this research study, the two most prominent active shooter resilience training programs in the United States had not been assessed for their impact on the perceptions and self-preservation skills of the target audience.

Measuring the impact of the training programs on reactions to actual violent encounters is virtually impossible due to the small number and unpredictable nature of targeted violence encounters. Anecdotal interviews with students who have completed active shooter resilience training and have then been subjected to an actual campus active shooter event suggest the training does result in more resilient and reactive potential victims of violence (R. Spivey, personal communication, July 22, 2013). Even law enforcement officers such as the Virginia

Tech and Blacksburg Police Departments recognized the value active shooter response training provided to facilitate a rapid response to neutralize an active shooter threat (Virginia Tech Review Panel, 2007). More recently, law enforcement officers from multiple agencies seamlessly applied active shooter response training doctrine to subdue a determined adversary in the Washington Navy Yard complex (Federal Bureau of Investigation, 2013). After-action reviews of these and other critical events suggest that training may influence the survival of potential victims.

This study empirically measured the solitary and combined efficacy of two highly diffused active shooter resilience training programs as factors in students' perceptions of safety and their understanding of targeted violence response strategies. Heretofore, no formal analysis had been conducted to objectively measure the singular or combined influence the training programs may have on their target audience.

The desire to protect students, staff, and faculty at institutions of higher learning is of paramount concern to educational leaders and public safety professionals. Investments in targeted-violence-related training, technology, and policies consume considerable resources and have increased for many universities following the Virginia Tech massacre (Rasmussen & Johnson, 2008). In a period of constrained and stagnant fiscal resources, evidence-based analysis should overcome emotionally driven decision making. Therefore, targeted violence and active shooter resilience training programs demand objective scrutiny. Understanding the positive influence of these programs and their respective deficiencies will lead to improved applications of existing treatments and the development of more effective programs in the future.

Purpose Statement

The purpose of this quasi-experimental descriptive research study was to test Knowles's (1980, 1984) theory of adult learning, andragogy, that compares the influence of exposure to an active shooter resilience training program to performance on the Student Perception of Personal Safety Survey (SPPSS). The SPPSS measured student's perceptions of safety, fear, and resilience as they related to targeted violence. The measurement of fear methodology was consistent with related research that has studied fear of crime and terrorism (May, Herbert, Cline & Nellis, 2011; Warr, 2000). The research approach involved four randomly assigned groups of undergraduate students identified through a convenience sampling method. The groups of approximately 30 students each were labeled Treatment A, Treatment B, Treatment A+B, and Control Group. Through a post-test only control group research design, threats to internal validity were minimized.

The two prominent active shooter resilience training programs examined in this study were selected based on their diffusion among potentially at-risk populations. The Department of Homeland Security and the Center for Personal Protection and Safety both claim tens of thousands of student completions of their self-paced training programs (B. Yagerman, personal communication, April 15, 2013; R. Spivey, personal communication, July 22, 2013). This diffusion is due in part to the perceived legitimacy of the organizations contributing to the development of the programs and, in the case of the private training program, an extensive customer base of prominent colleges and universities. The reputation and expertise of the organizations is accepted as being well intentioned and well-grounded in operational research and adult learning precepts. The central purpose of this study was to measure the influence these programs have on students' resilience associated with active shooter type events.

Measuring the influence of each training program independently identified potential strengths and weaknesses associated with each. Measuring the influence of the two programs delivered together was intended to identify the synergistic strengths or weaknesses of the combined programs. Informed decisions by educational leaders and potential students may be advanced with the empirical evaluation of how the programs influence the perceptions of consumers. The study findings may also be leveraged to identify more effective adult learning instructional methods to inculcate targeted violence identification and response skills among higher education populations.

Significance of the Study

The Columbine High School and Virginia Tech massacres represent tragedies in which victims overwhelmed by “danger close” targeted violence lacked the basis of knowledge to formulate effective response strategies. Well-trained and intentioned law enforcement professionals faced with an active shooter in a school environment have also been subjected to scrutiny for not matching their immediate response capability with an imminent threat. Recommendations from the 2013 National Summit on Multiple Casualty Shootings specifically called for an “easily consumable awareness piece on immediate steps individuals should take if confronted with an active shooter situation” (Paparazzo, Eith, & Tocco, 2013, p.12).

To close this well-known response gap, a wide variety of active shooter related training, tactics, policies, and technologies have emerged since the paradigm shifting Columbine tragedy. A shift from passive to proactive response strategies has been intended to minimize the lethality of an attacker and maximize the survival of potential victims. The efficacy of prominent active shooter resilience training programs for non-law enforcement personnel has not been sufficiently assessed. The high stakes nature of educating potential victims in lifesaving techniques requires a

deeper understanding of whether the treatments resonate with the student. Conversely, educational leaders that choose to offer no active shooter awareness training to their faculty, staff, and students should know if that decision is rational and defensible in a university environment.

The speed and surprise factors of hybrid and conventional targeted violence attacks require that potential victims be more adequately prepared to protect themselves and those to whom they can offer protection. Blair, Martaindale, and Nichols's (2014) analysis of active shooter events in the United States from 2000 to 2012 found that 49% of the attacks studied were over before police arrived to intervene (see Figure 1). Further, 17 of the 104 attacks studied were ended when victims took action to subdue the attacker. Educational and public policy thought leaders often focus on the capabilities of first responders to thwart an active shooter type of event. Meta-research on such incidents consistently suggests that most targeted violence attacks begin and end without a direct intervention by law enforcement. Most often the attacker, not a forceful response by a victim or first responder, dictates the terms of when an attack ends (Blair, Nichols, Burns, & Curnutt, 2013).

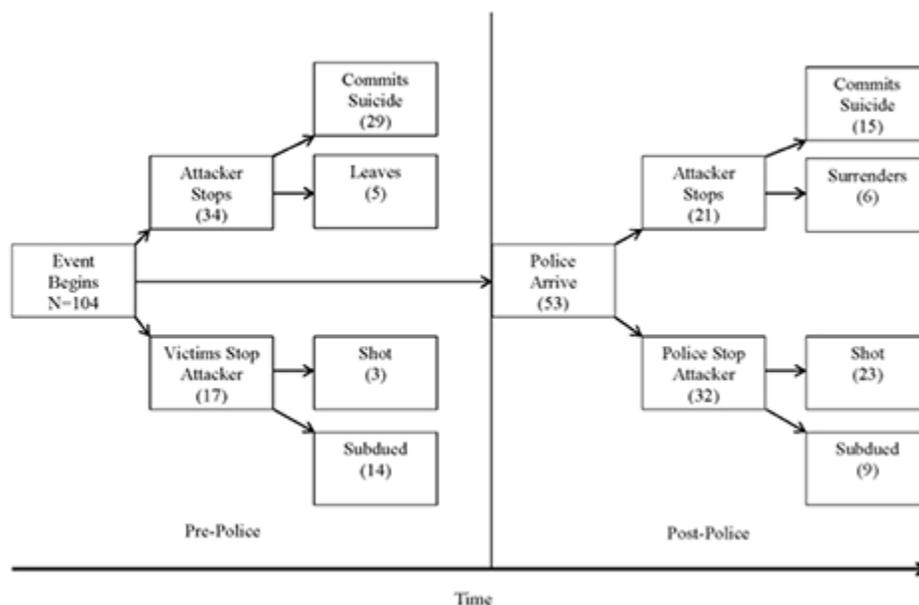


Figure 1. Resolution of Active Shooter Events in the United States (2000-2012). Adapted from “United States active shooter events from 2000 to 2010: Training and equipment implications,” and Active Shooter Events: 2000-2012, Blair, Martaindale & Nichols (2010, p. 6, & 2014, p. 1).

The need to educate potential victims and responsible parties to identify the potential of an attack before it happens, to react immediately when an attack happens in the general area, and to appropriately react when directly confronted by an attacker requires well-formulated adult learning strategies. The “when-then” and “if-then” methods of thinking about dangers are commonly used in law enforcement training to abbreviate the reaction process (Blair et al., 2013, pp. 82-83). Rather than freeze when confronted with a lethal threat, individuals may be educated and trained to have a recognition and reaction toolset that can be rapidly employed, thus limiting personal exposure to harm. Put quite simply, when a student hears something that sounds like a gunshot, he or she should be conditioned to immediately take defensive measures rather than second guess, ignore, or depend on others to interpret a potential threat.

The public assumes that the efficacy of response strategies and training programs have been well documented before investments are made by institutions of higher learning. Many students and professional educators would be alarmed to find that investments and policies can be motivated solely by a desire to do “something” rather than an ability to do the “right thing.” The elusive “right thing” requires evidence-based research that follows a scientific path of continuous refinement and improvement. Building resilience among at-risk student populations, the faculty that educates them, and the staffs that support them is a moral imperative in a world in which evildoers will continue to prey on those who appear unprepared to react. Soft targets must be hardened through proven educational strategies, not emotionally driven reactions.

Research Questions

The research questions for this study are as follows:

RQ 1: What is the independent and combined influence of the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program on university students’ sense of personal safety associated with targeted violence?

RQ 2: What is the independent and combined influence of the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program on university students’ sense of fear associated with targeted violence?

RQ 3: What is the independent and combined influence of the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program on university students’ sense of resilience associated with targeted violence?

Hypotheses

The following hypotheses and null hypotheses will be examined utilizing quantitative research methods:

H1₁: There will be a statistically significant difference in a student's sense of personal safety after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H0₁: There will be no statistically significant difference in a student's sense of personal safety after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H2₁: There will be a statistically significant difference in a student's sense of personal safety after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H0₂₁: There will be no statistically significant difference in a student's sense of personal safety after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H3₁: There will be a statistically significant difference in a student's sense of personal safety after completing the DHS "Active Shooter: What Can You Do?" computer-based training course and the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)"

active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H03₁: There will be no statistically significant difference in a student's sense of personal safety after completing the DHS "Active Shooter: What Can You Do?" computer-based training course and the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H4₂: There will be a statistically significant difference in a student's sense of fear after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H04₂: There will be no statistically significant difference in a student's sense of fear after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H5₂: There will be a statistically significant difference in a student's sense of fear after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H05₂: There will be no statistically significant difference in a student's sense of fear after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H6₃: There will be a statistically significant difference in a student's sense of resilience after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H06₃: There will be no statistically significant difference in a student's sense of resilience after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H7₃: There will be a statistically significant difference in a student's sense of resilience after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H07₃: There will be no statistically significant difference in a student's sense of resilience after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H8₃: There will be a statistically significant difference in a student's sense of fear after completing both the DHS "Active Shooter: What Can You Do?" computer-based training course and the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H08₃: There will be no statistically significant difference in a student's sense of fear after completing both the DHS "Active Shooter: What Can You Do?" computer-based training course

and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H9₃: There will be a statistically significant difference in a student’s sense of resilience after completing the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H09₃: There will be no statistically significant difference in a student’s sense of resilience after completing the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

Identification of Variables

The predictor variable in this study will be measured performance on the Student Perception of Personal Safety Survey (SPPSS). An adult’s ability to absorb and apply new information requires an andragogical appreciation for individual and group development. Performance on the SPPSS survey (DV) reflects an individual’s retention of concepts and protocols associated with active shooter and targeted violence events. The instrument will also identify a participant’s sense of personal safety with consideration given to self-reported levels of fear. Each training program (IV) utilized in this study and the combination of those programs represent stimuli that may positively or negatively influence SPPSS performance. An individual’s SPPSS-measured acuity concerning targeted violence is hypothesized to indicate

whether participants are well versed in preferred technical and tactical responses to acts of active violence. Furthermore, it is expected that the transfer and retention of knowledge associated with targeted violence may relieve anxiety that may negatively affect a student's social and cognitive development.

Definitions

The following terms and definitions are relevant to the evidence-based examination of active shooter resilience training programs:

Active Shooter--An individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms(s), and there is no pattern or method to their selection of victims (DHS, 2013).

Andragogy--Adult learning theory advanced by Malcolm Knowles; known as the art and science of helping adults learn (Henschke, 2011, p. 34).

Hybrid Targeted Violence--An intentional use of force to cause physical injury or death to a specifically identified population, using multifaceted conventional weapons and tactics (Frazzano & Snyder, 2013).

Resilience--Result of individuals being able to interact with their environments and the processes that either promote well-being or protect them against the overwhelming influence of risk factors and “the process of, the capacity for, or outcome of successful adaptation despite challenging or threatening circumstances” (Butler et al., 2009; Masten et al., 1990; Zautra, Hall, & Murray, 2010).

Student Perception of Personal Safety Survey (SPPSS)--A resilience-focused self-assessment instrument with content derived from DHS and CPPS post-test examinations to measure knowledge transfer and perceptions of fear and safety associated with targeted violence.

Targeted Violence--Any incident of violence where a known or knowable attacker selects a particular target prior to the violent attack (Fein, Vossekuil, & Holden, 1995).

Research Summary

A quasi-experimental post-test only with control-group design was used to determine the influence of various active shooter resilience training programs on college students' perceptions of safety and resilience. Quasi-experimental designs are recognized and scientifically rigorous approaches to draw statistical comparisons in social science research (Gribbons & Harmon, 1997). Randomization of participant group assignments, a sufficient sample population, and the use of a control group insure compliance with the quasi-experimental design model.

The research approach involves four randomly assigned groups of university students identified through a convenience sampling method. The groups of approximately 30 students each were labeled Treatment A, Treatment B, Treatment A+B, and Control Group. Through a post-test only control-group research design, threats to internal validity were minimized.

Assumptions and Limitations

Assumptions

This quasi-experimental post-test-only control group design made every effort to limit the threats to internal and external validity. Although this study accounted for participant selection and assignment, setting, and history, the limitations need to be recognized. This study used a sample of students who responded to a professor's request to voluntarily participate. The results of this study are only generalized to the current sample population. The research school is a large private Christian institution of higher learning located in Central Virginia. The demographic and philosophical composition of the population surveyed may not be representative of other college populations. The generalization of the findings to other universities would require consideration

of the student body's demographic composition and local attitudes towards potential crime victimization. Further, local, regional, and national incidents of targeted violence, such as the 2013 Boston Marathon bombing, the 2012 Sandy Hook Elementary School shooting, and the 2007 Virginia Tech massacre, may alter students' perceived risk of victimization and targeted violence sensitivity (Fallahi, Austad, Fallon, & Leishman, 2009). The same targeted violence events that influence educational leaders to implement active shooter education strategies may also influence students' desire to learn self-preservation response strategies.

Limitations

Recognizing the inevitable possibility of limiting influences on data and findings, this analysis of active shooter resilience training programs attempted to objectively ascertain the influence of such programs on a randomly selected diverse body of college students. To the best of the researcher's professional and ethical judgment, the results are accurately derived from peer-reviewed quantitative research procedures. The research approach and data analysis are open to replication at the surveyed college or other educational institutions.

The most compelling limitation is the potentially volatile impact that victimization may have on a participant. Participants directly or indirectly exposed to violence may yield a perspective that deviates from central attitudinal tendencies. Therefore, consideration must be given to andragogical influences that may connect adult learners to, or repel them from, new knowledge on sensitive topics. Two participants in this study voluntarily disclosed that they had been exposed indirectly to violence in an academic environment. Both of those students were receptive and supportive of the active shooter awareness treatments they were exposed to during the course of this study. Each conveyed a sense of urgency to expose students, faculty, and staff to training that may better inform and protect students from campus violence.

The persistence of Hybrid Targeted Violence suggests an ongoing need to understand strategies that disable potential attackers and fortify potential victims from harm. Arguably, hardened targets of trained and resilient potential victims may improve self-preservation actions, as well as interactions with professional responders who will be dispatched to these events as they unfold. The benefits of heightened resilience may also be useful outside of academic venues in workplaces, shopping malls, movie theaters, domestic situations, and other locations. While not a primary focus of this research, the ability to better identify potential attackers before they strike is a derivative and powerful benefit that may contribute to success stories that never gain high-profile media attention.

CHAPTER TWO: REVIEW OF THE LITERATURE

The purpose of this quasi-experimental post-test-only control-group design was to determine if there were statistically significant differences in the perceptions of college students regarding their personal safety after participating in prominent active shooter resilience training programs. This literature review summarizes relevant research associated with adult learning, pedagogy of fear, resilience, and an empirical analysis of campus violence research. The synthesis of theories of adult learning and relevant operational research provides a framework to analyze training programs designed to build resilience among college students.

This literature review examines empirical efforts made to bridge the gap between individual adult learners and resistance to unconscionable acts of violence. Theorists and educators recognize that a sense of personal safety is a fundamental component of an effective learning environment. This literature review underscores the gap that exists in both academic and operational research to understand the role of fear and enhance resilience in the face of rare, but deadly, acts of targeted violence at institutions of higher learning.

Conceptual Framework

Traditional university students' undergraduate careers are marked by self-directed transition. The student's transition transcends emotional, cognitive, and physical stages of development. Methods used to impart knowledge on K-12 learners must evolve to meet higher orders of thinking and motivation in postsecondary settings. Recent demographic studies of postsecondary education have reported larger increases in undergraduate students 25 years of age and older as compared to increases in undergraduate populations below the age of 25 (U.S. Department of Education, National Center for Education Statistics, 2012). Enrollment of students 25 and over rose 42% between 2000 and 2010. College and university students are increasingly

more aligned with adult populations than they are with juvenile learners. This transitioning and maturing population is well positioned to receive life safety awareness training without adversely impacting academic performance.

Theories of Learning

The art and science of teaching children is commonly referred to as pedagogy, whereas, andragogy refers to adult learning (Knowles, Holton & Swanson, 2012). Pedagogical approaches are teacher-focused methods that seek to impart knowledge on passively engaged students. Whether through legal mandate or parental encouragement, students in a pedagogical environment are often required to participate as a condition of their academic status. In the same manner that an empty drinking glass would be expected to retain liquid poured into it, children are expected to retain what they are exposed to in a pedagogical learning environment. This oversimplification of the pedagogical body of knowledge is intended to differentiate the education of children from the effective education of self-directed adults. The focus of this dissertation involves the education of adult learners in a university environment utilizing the principles of andragogy.

The art and science of helping adults learn was defined and refined by Malcom Knowles (1980, 1984) in the mid to late 20th century. Knowles popularized the term *andragogy* to describe the principles of adult learning. The term had originally been used by German high school teacher Alexander Kapp in 1833. In 1926, the term andragogy gained attention in the English speaking world when Eduard C. Lindeman published *The Meaning of Adult Education* (1989). Lindeman suggested that older learners required different types of engagement in an academic environment. Knowles further developed Lindeman's approaches to adult learning to more clearly appreciate students' intrinsic motivation and desire to blend experiences with new

information to find relevance in the learning process.

Malcolm Knowles has been recognized by many scholars as the father of adult learning theory. Heavily influenced by the converged fields of sociology and psychology, Knowles resisted pedagogical approaches to reach older learners. Rather than authoritarian relationships between student and learner, andragogy relied more on the student being a willing and active participant in the learning process. Learning for adults, according to Knowles, is a student-centered equation with humanistic considerations that are lacking in parochial pedagogical concepts.

Knowles et al. (1980) identified six stages of adult learning, each of which is relevant to understanding a university student's receptivity to active shooter resilience training. Unlike in a children's learning environment, adult learners have a prominent need to know the reason for learning something new (Need to Know). Second, the learner's experience provides the basis for learning activities (Foundation). The third stage recognizes that adults need to be responsible for their decisions on education (Self-concept).

An awareness of active shooter events and campus violence in general may build the bridge to Knowles's fourth stage, which recognized that adults are most interested in learning about subjects that have immediate relevance to their work and personal lives. Knowles's fifth stage suggested adult learning is problem-centered rather than content-oriented. Self-preservation and fear of victimization are problems that may draw a learner to resilience training opportunities. Knowles's sixth principle suggested that mature students respond better to internal versus external motivators. When applied effectively, the six aforementioned adult learning stages can facilitate a robust learning environment that connects adult students to new knowledge.

Pedagogies of Fear

Abraham Maslow's (1954) Hierarchy of Needs bases students' ability to achieve higher order needs, such as knowledge attainment, on their ability to achieve a foundational sense of personal safety (Bowen & Bowen, 1999). In accordance with Maslow's progressively dependent model, students of all ages are not able to maximize their potential when they are scared, intimidated, or threatened. Educational leaders must take care to provide a comfortable and safe learning environment for both children and adult learners to allow for progression within Maslow's developmental construct.

Fear is a natural instinct that can either protect an individual from actual danger or unnecessarily confine an individual due to perceived threats that do not exist. Opportunities for anxiety among undergraduate and graduate students are already high without factoring in anxiety from risks to personal safety. Pressure to perform well academically and socially can strain college students' ability to maximize their potential. Following an act of egregious school violence, regardless of geographic proximity, students will often increase their levels of fear and anxiety (Kaminski, Koons-Witt, Thompson, & Wise, 2010). As noted through the lens of Maslow's hierarchy, this fearful response can have a negative impact on a student's ability to learn and socialize in a university environment. The combination of "always internet connected" college students and "crisis of the moment" media outlets exposes human tragedies to consumers in graphic detail. Often these unfolding events are live-streamed without the benefit of facts and sensitivity for the effected participants (Bondü, Cornell, & Scheithauer, 2011). Research suggests that the longer people are exposed to these stories of violence, the greater the chance that the incident will personally affect their sense of safety and anxiety (Kaminski et al., 2010; Kelsay, 2007). Fox (2008) suggested that the amount of active shooter

response training university students receive should be reasonable enough to build knowledge but not instill fear or an inflated sense of harm. Veil and Mitchell (2010) recommended the inclusion of tolerance messages in campus safety campaigns to build cultural sensitivity among students in lieu of divisiveness.

In the wake of recent incidents of school violence, it is important that school administrators balance security needs against the perceived fear that may accompany those enhanced measures. The United States Department of Justice has encouraged police departments to focus on fear reduction strategies due to the deleterious impact fear has on behavior, economics, and social interactions (Cordner, 2010). Tension between the statistical likelihood of a threat manifestation and the immense potential harm that may come from the threat leaves administrators making decisions that are not empirically supported by actuarial probability calculations. Simply put, many educational and public safety leaders prefer to err on the side of caution by implementing physical and educational solutions to build perceived resilience from targeted violence rather than taking a do-nothing approach. Conversely, some organizations have consciously decided to offer no resilience training to students, faculty, or staff. These decisions are often based on concerns over civil liability and fear abatement concerns.

Attitudes Toward Violence

Collyer, Brell, Moster and Furey's (2011) study of university students' sensitivity toward violence revealed that a majority of the students were sensitive to violence rather than desensitized. While the research was not intended to reflect students who may be prone to violent acts, it did offer some insight on how individuals tune in to the influence of violence. Collyer's "more violence sensitive than not" finding may support greater receptivity of college students to targeted violence response training under Knowles's adult learning paradigm. Based

on research associated with unhealthy fear, it is important not to raise awareness of violence to a level that provokes overwhelming anxiety. When contrasted with fire safety training, knowing where exits are before they are needed and knowing what to do when an alarm bell rings are learned behaviors that should not create an exaggerated fear of entering a building. Furthermore, the omnipresence of fire detection and firefighting equipment in all public spaces underscores the importance of empowering individuals to take lifesaving action before trained professional fire fighters arrive to address a threat.

The problem of youth violence is one that is fraught with myths and misperceptions by the public and professionals who report on such incidents (Anderson, Benjamin Jr., Wood, & Bonacci, 2006). The research by Anderson et al. (2006) noted that, contrary to public perceptions, violent behavior is actually increasing while weapons-related incidents have remained stable for almost 20 years (p. 123). Nevertheless, Anderson et al. recognized the importance of understanding student attitudes towards violence in order to better understand aggression.

Through a revised four-factor model of the Velicer Attitudes Toward Violence Scale (VATVS), the research by Anderson et al. (2006) achieved strong aggression prediction fidelity. While it is generally understood that aggression is very much an individual personality difference, the influence of violent events on how an individual develops or suppresses aggression is not well known. The application of the VATVS four-factor model may help to identify those who have a greater potential for aggression. The tool will not identify those who encounter a dramatic stimulus or event that radically changes their perspective on aggression. For example, a passive mother may experience an extreme change in her aggression when the safety of her child is threatened. This change is very difficult to measure, which confounds

efforts to predict violence. Anderson et al. recognized a need for further research to better understand gradual and acute changes in attitudes towards violence. Both gradual and acute changes in violent behavior have been observed in potential and actual incidents of targeted violence.

Resilience

Defining Resilience

Resilience is a term that has been used to describe conditions in the fields of physical science, engineering, social science, computer science, public policy, and economics. Each domain favors a unique definition and description of resilience, with some common underpinnings. Merriam-Webster (2014) defines resilience as “the capability of a strained body to recover its size and shape after deformation caused especially by compressive stress” and as “an ability to recover from or adjust easily to misfortune or change.” Herrman, Stewart, Diaz-Granados, Berger, Jackson, and Yuen’s (2011) study of resilience found no single operationally agreed upon definition in the fields of psychology and mental health. Herrmann et al. summarized resilience to be defined as a “positive adaptation or the ability to maintain or regain mental health despite experiencing adversity” (p. 258). The hybrid definition by Herrman et al. is consistent with a larger body of literature.

Other academic domains have engaged in internal and external debate over the definition and measurement of resilience. Neuroscientists Wu, Feder, Kim, Calderon, Charney, and Mathé (2013) succinctly described resilience as “the ability to adapt successfully in the face of stress and adversity” (p.1). Wu et al.’s meta-analysis of relevant research found agreement on resilience being described as the capacity and dynamic process of adaptively overcoming stress and adversity while maintaining normal psychological and physical functioning (Russo et al.,

2012; Rutter, 2012; Southwick & Charney, 2012). Regardless of semantics, members of the medical and social science communities agree that resilience is a desirable condition of stability when it accommodates an appreciation for adaptation and change.

The historical and contemporary use of the term resilience by economists, computer scientists, and engineers draws an even larger community of researchers around an increasingly popular theme. Journalists and policy makers have a tendency to call for increased resilience in the wake of manmade and natural disasters. Economists are interested in the resilience of financial markets to support prosperous conditions, computer scientists are interested in resilient computer networks that maximize reliability and minimize cyber-attacks, and engineers want to build resilient structures that resist physical and environmental threats. Education and public safety leaders arguably desire more resilient students and faculty members. Resilience from targeted violence and active shooter events deserves considerable attention from those who seek to maintain safe learning environments.

Reid and Botterill (2013) cautioned that multiple meanings of the term resilience may create conditions that favor ambiguity over clarity. Furthermore, in matters of public policy, the application of the term resilience should be based upon clear definitions and supporting research that is germane to the policy being debated. The examination of college student resilience associated with violent crimes draws figuratively and literally from the definitions that describe fortified defenses against dynamic threats.

Individual Resilience

For decades doctors and psychologists have studied the influence of stress, emotional abuse, exposure to violence, and similar forces on the physical and psychological wellbeing of individuals. The study of Posttraumatic Stress Disorder (PTSD) in children, adults, and high-risk

professions such as law enforcement and the military is infused with resilience-related themes. For example, a neurological study of 97 Brazilian police officers exposed to targeted gunfire attacks suggested predictors of resilience were “self-efficacy, empathy and optimism in addition to supportive feeling as traits that can boost resilient processing” (Peres et al., 2011, p. 733). Cognitive factors and psychotherapeutic techniques were shown to influence the participants’ risk of PTSD. Research that identifies potential influencers of individual resilience is relevant to the study of active shooter awareness training programs. It is noted that better informed individuals are believed to exhibit less stress and greater resilience in the face of adverse stimuli.

The United States Army has invested considerable research and training resources to improve individual soldier resilience. These efforts strive to mitigate the life-threatening risks presented before, during, and after combat operations. Higher than average rates of suicide have suggested that comprehensive medical, psychological, and leadership strategies are required to protect service members from harm. Dedicated training for soldiers and family members, such as Comprehensive Soldier and Family Fitness (CSF2), has served as a primary tool to raise awareness of individual resilience strategies and to create a culture that recognizes degradations in soldier resilience before harm occurs. The Army considers CSF2 to be “an integral part of the Resilient and Ready Campaign” (Bromberg, 2014, p. 1). Resilience-building strategies for war fighters may have applicability for civilians, such as university students, exposed to warlike conditions during active shooter events. Building resilience appears to be an endeavor that requires deliberate leadership and action.

The Army’s Study to Assess Risk and Resilience in Servicemembers (STARRS) represents the largest epidemiological and neurobiological study of servicemember mental health (Kessler et. al., 2013). Findings of the 5-year study will be leveraged by the Army and the

National Institute of Mental Health to improve civilian and military efforts to build resilience and reduce the residual problems that occur when resilience degrades. Individual resilience can benefit those exposed to targeted attacks in combat environments, civilian settings, and peacetime training environments, such as the Fort Hood active shooter event. Lessons in these environments may be transferable to civilian domains.

Organizational and Community Resilience

The concept of organizational resilience represents a condition in which an entity or community maintains an ability to withstand external forces that threaten peace, harmony, or mission accomplishment. Similar to the variety of academic definitions for resilience, the term organizational resilience is influenced by the attributes of individual resilience. The organizational resilience of a military or police unit may require that it withstand and deliver violent attacks while the resilience of a faith-based organization may require that it provide a forum for collective worship and community charity. Resilient college students, faculty, and staff may contribute to a more resilient learning community and institution.

The field of emergency management has embraced strategies to create community and organizational resilience. The Federal Emergency Management Agency (FEMA, 2013) has advanced the concept of “Whole of Community” to recognize that all community members, rather than just public safety officials, have a shared role in disaster-related activities. By engaging all community members in the planning, responding, and recovery phases of a disaster, communities are considered to be more organized and resilient. FEMA and its parent organization, the United States Department of Homeland Security (DHS), have invested considerable public funds in training programs that seek to build individual and community resilience. The “Active Shooter: What You Can Do” (DHS, 2013) training program is one such

example.

Gibson and Tarrant (2010) identified a variety of organizational resilience models relevant to all-hazards emergency management. They called for a “Principals Model of Resilience (PMR)” based on their study of strategies from a variety of disciplines. The researchers argued that resilience should be considered an observable outcome rather than a process or policy condition. Further, resilience is not a static single trait, nor is it measurable by a one-dimensional scale. Measurements of resilience should be comprehensive rather than myopic.

Gibson and Tarrant (2010) posited that resilience is a multidimensional model that persists over a range of situational conditions. In the context of emergency management, the researchers argued that resilience must be built upon sound risk management principles. This dynamic model stands in contrast with rational static models of resilience that fail to adapt to dynamic hazards. Administrators and public safety leaders in university environments can draw utility from principle-based resilience building models that prepare communities for the full range of potential hazards.

Resilience in Crisis and Disasters

Individual and group responses during life threatening incidents are often the most influential factor that contributes to survival or death. Experts frequently examine individual and group dynamics following a crisis event such as a school shooting, a terrorist attack on a subway system, or a building fire. Unfortunately, cases of new deadly events to study will continue to grow as contemporary manmade and natural disasters occur. Through quantitative and qualitative research, psychology, sociology, engineering, and other formal fields of study have recommended strategies that optimize individual and collective survival. These lessons have

been applied in the development and construction of active shooter awareness training programs to mitigate, identify, avoid, and react to life safety threats.

Similar to active shooter events, terrorist attacks on mass transit systems represent an apparently unpredictable phenomenon that has plagued nations around the world for decades. Over 800 attacks on mass transit systems from 1960 to 2000 resulted in approximately 3,500 deaths and 15,000 injuries (Bruyelle, O'Neill, El-Koursi, Hamelin, Sartori, & Khoudour, 2014, p. 38). While individually tragic, these events have afforded researchers with the opportunity to develop resilience-building strategies based on individual and group dynamics. Training has emerged as a primary resilience-building strategy.

The research of Bruyelle et al. (2014) has suggested that education leaders and public policy experts can improve the survivability of non-first responders through inclusive planning and resilience-building strategies that facilitate a knowledge of what is happening coupled with a knowledge of what to do. They cite effective training, as well as alert and warning systems that expedite the decision to evacuate, as being both useful and very much needed. This is echoed by Drury and Cocking (2007), who found that training influenced cognitive decision making and action of potential victims faced with a life threatening disaster. Further, the social dimension of crowd behavior seems positively influenced by resilient individuals who can emerge as cooperative groups rather than individuals in panic.

Targeted Violence

In early 2013, the United States Department of Homeland Security (DHS) announced the establishment of the DHS Campus Resilience Pilot (CRP) Project. Under the direction of then Secretary Janet Napolitano, a consortium of six colleges and universities was selected to “promote campus resilience—directly supporting the goals of the President’s Plan to Reduce

Gun Violence, and making educational institutions safer and more prepared” (2013, p. 1). The CRP pilot project represented a larger DHS-led strategy to enhance resilience at all institutions of higher education in the United States. A panel of experts appointed to the Homeland Security Academic Advisory Council (HSAAC), Subcommittee on Campus Resilience, articulated a compelling need to build resilience among the students, faculty, and staff at institutions of higher learning.

Through the HSACC (2013), community and campus resilience efforts have been advanced through emergency operations planning resources, Campus Community Emergency Response Team (CERT) training, an Active Shooter Awareness resource portal, an Academia & Resilience online portal, and public education campaigns (i.e., See Something Say Something, Campus Ready, Active Shooter Preparedness Training, etc.). The collective efforts of the HSACC build higher education community capabilities to effectively identify, mitigate, and respond to all-hazard risks. Resilient campuses are perceived by educators and policy makers to be both safer for individuals and more stable for organizations.

Growing Complexity of Violence

Complex coordinated attacks, also referred to as incidents of targeted violence, are a daily occurrence throughout the world (Drysdale, Modzeleski, & Simons, 2010). These events are not confined to communities engaged in war, nor are they limited to communities with unique demographic constructs. Instead, these events occur in communities of all sizes throughout the world (Bondü et al., 2011; NYPD, 2012). With respect to school-related incidents of serious attacks, these events often draw widespread media attention almost immediately due to the heinous nature of the killing and injuring of students in a sacrosanct school environment.

The simple but commonly used term “active shooter” is insufficient to describe the complexity of many incidents of targeted violence. Frazzano and Snyder (2013b) suggested that Hybrid Targeted Violence (HTV) is a more appropriate descriptor to guide training and policy discussions. HTV (see Figure 2) is defined as an intentional use of force to cause physical injury or death to a specifically identified population, using multifaceted conventional weapons and tactics. This definition based on “hybrid” weapons and tactics better captures the operational range of hazards confronting first responders and potential victims. The concept of greater complexity in attack modalities should be reflected in the development of resilience training programs for students, faculty, and staff of higher education institutions. Rather than focus exclusively on firearms as the only modality, educators should consider the combined use of firearms, fire as a weapon, improvised explosive devices, edged weapons, and military maneuver and ambush techniques. Consideration should also be given to the potential for attacks involving more than one perpetrator.

$\text{(Multiple Weapons) + (Targeted Population) + (Planned Violent Action) = HTV}$ <p>Example: (Small Arms and Arson) + (School Population) + (Ambush Tactics) = HTV</p>
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Figure 2. Hybrid Targeted Violence (HTV) components and example by Frazzano and Snyder (2013).

School and Campus Violence

Educational institutions throughout the world have experienced the trauma of armed violence against student populations (Smith, 2007; Stone & Spencer, 2011). These attacks usually involve the use of conventional weapons such as firearms and improvised explosive devices. Bondü et al. (2011) suggested that the carrying of weapons in schools dates back to the Middle Ages. Even today, many targeted school attacks involve edged weapons such as knives and swords rather than firearms. The most common aspect of this worldwide phenomenon is that the incidents are often targeted efforts by individuals with mental or emotional instabilities. Stone and Spencer (2011) suggested that preventive measures are beneficial but reactive measures are equally important to harden students as self-defending targets. In response to a lengthy history of deadly attacks on students, Stone and Spencer discussed the use of active shooter drills, school resource officer assets, and ingenious measures such as utilizing textbooks as improvised body armor to mitigate the risks of death and serious injury. This research placed considerable emphasis on empowering potential victims to protect themselves rather than rely on a law enforcement response.

According to Thompson, Price, Mrdjenovich, and Khubchandani's (2009) survey of campus law enforcement executives, 35% of the universities sampled required freshmen to attend an orientation that disseminated information on personal safety, including potential

firearm violence issues. The same survey found that 32% of the universities reported having training programs to prepare faculty members to respond to an active shooter situation in their classroom. While the analysis of the survey data by Thompson et al. had limited operational utility, the raw data provided a contemporary impression of active shooter preparedness by campus law enforcement executives. These findings support the increasing interest and growth of government and for-profit active shooter programs for non-law enforcement personnel.

Threat Assessments

Dewey Cornell (2010), a noted authority on student threat assessments, recognized that the Virginia Tech massacre in 2007 may have been a “statistical anomaly” (p. 11). However, concern about school violence is acceptable and compelling. Cornell has preferred to focus on the identification and disruption of threats before they manifest in acts of violence. Cornell’s threat assessment teaming approach hinges on a heightened state of awareness by all community members to recognize and report behavior that is potentially dangerous. Most professionals recognize the tremendous challenges of preventive threat identification, but they remain committed to the pre-attack identification dividends that it can produce (Bondü et al., 2011). The relationship between targeted violence awareness training and identifying potential threats before they manifest in the form of attacks is worthy of exploration. It should be understood that individuals cannot be expected to effectively identify a potential threat if they have not been formally educated on what to look for and who to report their concern to.

Threat Response

The National Tactical Officer’s Association (NTOA) has traditionally focused on law enforcement special operations policy, training, and equipment interests. Recently NTOA broadened their Special Weapons and Tactics (SWAT) centric training to include regular patrol

officers and other first responder disciplines. NTOA's Multi-Assault Counter Terrorism Capabilities (MACTAC) course is one example of an advanced skills training program designed to interrupt, disable, and defeat a complex active shooter event as rapidly as possible (Sanow, 2011). NTOA also offers a range of educational programs related to school and workplace violence, patrol response to active shooters, and violent critical incident leadership training. Based on an analysis of targeted violence, Klein (2006) emphasized the importance of law enforcement professionals preparing for complex and conventional attacks that require forceful responses. Reliance on negotiations should not be an exclusive response strategy.

NTOA has been recognized by professional educators as an authoritative training resource and contributor to school violence policy discussions. Winkle (2009) cited NTOA's (2003) research that reported the average active shooter event lasts 17 minutes, with the majority of deaths occurring in the first 3 minutes (p. 47). Winkle's research findings called for active shooter drills and training to be conducted with the same frequency as fire drills. Furthermore, Winkle recognized that educators maintain a critical role in responding to school violence in the seconds and minutes that follow an attack.

Threat response must also consider the role of potential victims. The study of active shooter events from 2000-2012 by Blair et al. (2014) found that 49% of active shooter events begin and end prior to the arrival of law enforcement (see Figure 1). According to their most recent analysis published in 2014, the frequency and lethality of these events is increasing (see Figure 3). The intersection of increasing frequencies and victims on their own prior to the arrival of law enforcement raises the emphasis on training for potential victims in order to limit exposure to harm and to empower individuals to take offensive action when necessary. Passive response strategies and ignoring the education of potential victims are questionable practices

when contrasted against the reality of the meta-analysis and evidence-based recommendations of Blair et al..

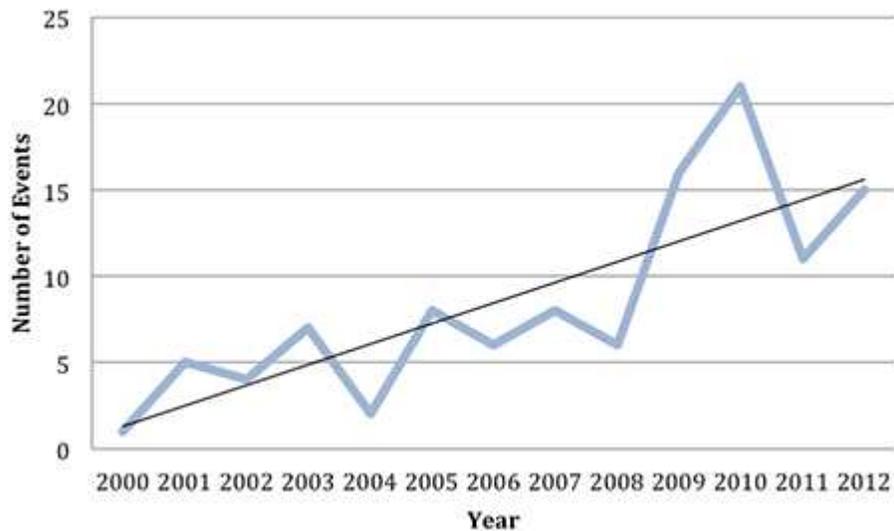


Figure 3. Active Shooter Events by Year (2000-2012). Adapted from Blair, J. P., Martaindale, M.H., & Nichols, T. (2014). Active Shooter Events from 2000 to 2012. FBI Law Enforcement Bulletin (p. 1).

A paradigm shift in training, preparedness, and cognition is needed to close the reactionary gap between potential victims and deadly attackers. This shift may be accelerated through relevant awareness training and response exercises delivered to educators and other non-law enforcement personnel (Frazzano, 2010; Piotrowski, 2011; Violino, 2010). The upward trend in active shooter event frequency underscores the need for a paradigm shift in how civilians and first responders educate themselves.

Resilience-Focused Survival Training

Developing survival skills among student populations can be mapped to both pedagogical and andragogical educational approaches. For example, primary and secondary students have been conditioned to rely on adult direction during an emergency such as a fire alarm or incident

of violence at a school building. It can be argued that educators in these K-12 schools have also been subjected to a pedagogical approach. Teachers have been trained to take directions from administrators to shelter in place, evacuate, or hide from a potential threat in accordance with authoritative instructions.

As students mature, greater degrees of discretion, discernment, and decision making can be imparted during survival skill education in accordance with the principles outlined by Malcolm Knowles (Knowles et al., 2012). Students in postsecondary education environments bring a broader frame of reference regarding threats to their personal safety, and they have a greater appreciation for techniques to mitigate those threats. As students mature, their “need to know” and motivation to learn more about survival skills are likely to increase. This is especially true after an active shooter event gains national or regional attention.

Lessons that build survival skills and resilience among university populations must be relevant and of sufficient interest to draw the learner toward the learning objectives. Through an interactive learning environment, students may develop the fundamental skills to take appropriate protective actions without the direction of an instructor or authority figure. Most university students are aware of rare but highly publicized events involving campus violence. Events such as the Virginia Tech massacre, the Sandy Hook Elementary massacre, the Aurora Mall shooting, or local contemporary acts of targeted violence should provide the motivation needed to connect students with response and resilience-building learning opportunities (Callaway, Westmoreland, Baez, McKay, & Raja, 2010).

Research associated with criminal justice education programs suggests that andragogical approaches are better suited to develop knowledge among adult learners (Birzer, 2004). One-directional lectures and dictatorial militaristic training has failed to develop students who could

think critically and solve problems in a dynamic working environment. Empowerment of students to take action is critical in any profession that involves a risk of life. By extension, empowerment of university students to recognize potential threats and formulate actionable strategies can be advanced by having engaged learners who bring their personal experiences and circumstances to the learning environment. Higher levels of student motivation can be achieved when these components of substance and interest are threaded to maximize engagement by students, faculty, and staff.

Resilience-Building Education Programs

Awareness is the first component of preparedness. The capability to respond to a threat requires recognition of what is happening and an ability to react in a manner appropriate to the circumstances. The failure to take protective measures by school-age children against an attacker is understandable given their juvenile frame of reference. More mature high school and college students have also been known to not take all of the protective measures available when faced with potentially lethal assaults. This dissertation study posits that formal active shooter recognition and response training may increase student survivability during an attack. Such education programs may also enhance the recognition of persons who may present a threat in the future before they launch an attack. Heightened awareness coupled with a fundamental knowledge of how to react can build a more resilient potential victim (Callaway et al., 2010).

The focus of this study is on prominent self-directed active shooter resilience training programs. The first is the Department of Homeland Security's (DHS) "Active Shooter: What You Can Do" (2013) interactive web-based training program. The second training programs is the Center for Personal Protection and Safety's (CPPS) "Shots Fired on Campus: When Lightning Strikes (Student Edition)" (2008). These two programs represent the most prominent

active shooter resilience training programs in use today among the general population and among university populations. Their accessibility and affordability--one is free and the other has a modest licensing fee--have contributed to their rapid diffusion.

“Active Shooter: What You Can Do” (DHS, 2013)

The DHS training program is fortified by a collection of references, training aids, and instructional material designed for civilians and non-law enforcement responders to increase their awareness of dynamic armed attacks. The DHS curriculum is the result of a partnership with the National Tactical Officers Association (NTOA), the Fairfax County Police Department, the National Retail Federation, and the Retail Industry Leaders Association. Matthew S. Prager, Chief of Distance Learning for the DHS (FEMA) Emergency Management Institute, reported that as of July 30, 2013, the DHS active shooter course has been completed by 287,729 people (personal communication, April 8, 2013). The course is designed for the general public, with workplace violence themes rather than an educational environment theme.

The objectives of the DHS Active Shooter: What You Can Do interactive web-based course are as follows: Describe actions to take when confronted with an active shooter and responding law enforcement officials, recognize potential workplace violence indicators, describe actions to take to prevent and prepare for potential active shooter incidents, and describe how to manage the consequences of an active shooter incident (DHS, 2012). The 45-minute self-paced multimedia course is followed by a 25-minute examination that requires a passing grade of 75% to earn a DHS course completion certificate. The course is also offered in a 4-hour instructor-led format.

The three primary themes of the DHS Active Shooter: What You Can Do (2013) course detail how to prepare for, respond to, and follow up after an active shooter event. The target

audience is non-law enforcement personnel who may be exposed to an active shooter event in a wide variety of settings. Providing students with strategies to respond to an active shooter by “evacuating, hiding, or taking action,” depending on the circumstances, is designed to promote rational reactions rather than irrational actions or a failure to take protective actions when faced with such an event (DHS, 2013).

The DHS program also provides students with guidance and considerations for dealing with the aggressive law enforcement response to an active shooter event. The high risk and emotion of active shooter events could potentially result in victims being mistaken for attackers by law enforcement. To ameliorate this risk, DHS provides calming and non-threatening techniques that support law enforcement response forces. The course also provides administrative guidance to develop Emergency Action Plans to guide employee response during a critical incident. A component of the pre-event stage is to develop individual awareness of indicators of potential workplace violence. The post-course examination measures the retention and comprehension of active shooter response learning objectives immediately following completion of the lessons.

“Shots Fired on Campus: When Lightning Strikes (Student Edition)” (CPPS, 2008)

The Center for Personal Protection and Safety (CPPS) is a for-profit organization with expertise in the production of targeted violence awareness, prevention, and response training programs. CPPS has trained over 1 million people through its programs on general workplace violence, campus-based violence, healthcare environment violence, domestic violence, and violence that may occur during domestic and international travel. Randy Spivey, Chief Executive Officer of CPPS, is a noted authority on violence prevention and violence response strategies in public, healthcare, and academic environments.

The CPPS catalog of adult education tools is based, in part, on lessons learned through U.S. Department of Defense education programs that fortify warfighters to prepare for life and death encounters. Scaffolded by Meichenbaum’s Stress Inoculation Training principles, CPPS has blended adult education theories with a strong foundation of operational research involving targeted violence (Meichenbaum & Deffenbacher, 1988). Over 1,500 universities utilize the CPPS “Shots Fired on Campus” course to supplement or supplant their active shooter education programs. Within the first year of the Shots Fired on Campus training program’s release, 500 universities had purchased the \$1,495 program (Perez, 2008). CPPS’s campus-violence-related training programs appears to be the most numerous of all such commercially available programs.

Distance Learning Delivery

Evidence suggests that well designed online and self-paced learning can effectively connect students to new information, thereby imparting knowledge. The ability to motivate students, especially university students, to engage in an online setting must capitalize on the intrinsic sources of motivation that Malcolm Knowles recognized long before the Information Age of ubiquitous internet connectivity. Maximizing motivation of online learners was observed by Pettinger and Doering (2010) in their study of online completion rates in a self-study pharmacy program. Self-regulated learning in an online environment offers unique challenges and opportunities that must be recognized to maximize learning and minimize failure on the part of educators and instructional systems designers (Pintrich, 1999).

Keller’s ARCS model of motivational design is commonly applied in the development of effective online learning programs. Keller defined motivational design as “the process of arranging resources and procedures to bring about changes in motivation (1987, p. 3).” Keller’s (2008) theory relied on four main areas--Attention, Relevance, Confidence, and Satisfaction--

with each having applicability among student populations and among working populations that could leverage higher motivation to achieve higher performance. Keller's work acknowledged the role effective instructional systems design exerts on student motivation. When attention is captured through relevant subject matter, an engaged student is positioned to realize higher levels of confidence and greater degrees of satisfaction. This can translate into a more influential learning experience.

It should be noted that poorly designed learning programs may demotivate a highly motivated student as much as well-designed learning program can bolster motivation in students. Keller's problem-solving approach is ripe for application within survival and resilience-based training programs. Dynamic life-threatening situations in university environments require skilled and conditioned students to develop solution options based on the principles of sound tactics and doctrine.

Keller's research supposition suggests that students turned off or uninspired in a life-saving lesson, to include an active shooter resilience training program, may be less likely to effectively retain the lessons they have been exposed to. Therefore, it is imperative that education programs related to life safety skills leave the student with both an increased level of knowledge and an increased level of interest. This can be accomplished in both distance and traditional instructor-led learning environments when the tenets of Knowles's and Keller's research are harmonized by professional educators.

Recognizing generational and individual differences associated with students will further advance the likelihood of delivering an effective learning experience. Conklin's research underscored the importance of connecting with Millennial Learners through Experienced Based Learning, under the umbrella of Knowles's andragogy principles (2012). The role of generational

differences and learning expectations merits exploration. Millennial learners with robust technical skills are well positioned to maximize their educational engagement through well-designed multimedia lessons (Pardue & Morgan, 2008). Educational technologies matched to the personal, social, and technical preferences of the student may enhance to quality of their learning experience.

Proserpio and Gioia (2007) promoted the use of online media, such as the web-based active shooter training program offered by DHS, to reach students who are drawn to these venues for personal and professional enrichment (p. 79). Therefore, “how” a lesson is taught, is just as important as “what” is taught, especially to students fluent in the benefits of technology. The risk of demotivation remains present when technically conversant students are exposed to poorly designed online instruction.

Summary

As individuals mature, they tend to gain a greater appreciation for the sanctity of human life. The evolution from adolescent to adult often brings a greater degree of interest in risk mitigation and self-preservation. Incidents of targeted violence, such as active shooting events, tend to heighten awareness and concern regardless of geographic proximity. When heightened awareness is coupled with an effective resilience education program, the precepts of Knowles’s theory of effective adult learning can be realized. Further, fear can be mitigated or at least understood when rational response strategies are understood. Law enforcement officers and the military train for violent encounters so that they can meet them with a threat-neutralizing response. In the absence of learning “if-then” survival lessons, panic and paralysis are likely outcomes. Training is a vital factor for effectively responding to low-frequency, high-risk events that threaten human lives.

A comprehensive review of relevant theoretical and empirical literature suggests that well designed distance learning and self-paced active shooter resilience training programs may contribute to effective adult learning experiences. The development of resilient individuals may also lead to higher levels of resilience among organizations and communities. As promoted by the Department of Homeland Security, higher levels of resilience can reduce the impact of a manmade or natural disaster. Furthermore, recovery from a harmful event can be improved with a resilient population.

While the events are very rare, the high likelihood of death and serious injury when an active shooter event occurs should encourage institutions of higher learning to build awareness and a “survival mindset” among faculty, staff, and students. Understanding programs that close knowledge gaps and increase awareness will only make universities into stronger communities and more hardened targets for those who want to bring harm to innocent populations (Greenburg, 2007). The laudable goals of Knowles’s adult learning theory and the establishment of a sense of safety that Maslow called for can facilitate self-actualization through self-preservation and survival.

CHAPTER THREE: METHODOLOGY

This chapter describes the research design, hypothesis to be tested, participants, setting, instrumentation, procedures, and data analysis utilized in this study. This study measured the influence of two active shooter response training programs on college students' perceptions of personal safety and resilience. While active shooter events are statistically rare on college campuses, they do generate a considerable amount of attention due to the profound impact they have on the communities they touch. A larger national, and even international, community is further impacted by these events due to instantaneous media and political attention. Recent incidents of targeted violence, such as the Aurora Theater attack, Sandy Hook Elementary massacre, Boston Marathon bombing, and Washington Navy Yard shooting, are contemporary examples of violence that drives prophylactic response strategies.

This study measured the influence of independent training programs developed by the U.S. Department of Homeland Security and the Center for Personal Protection and Safety to prepare civilians and non-law enforcement personnel to recognize and respond to an active shooter situation (DHS, 2013; CPPS, 2008). These types of training approaches were recently recommended by Commissioner Raymond Kelly in the New York City Police Department's (NYPD) report "Active Shooter: Recommendations and Analysis for Risk Mitigation" (2012, p. 3). The NYPD report has received elevated media, public, and practitioner attention as it includes findings related to the most recent active shooter events in Newtown, CT, Aurora, CO, Tucson, AZ, and Utoya, Norway (p. iii). The April 15, 2013 Boston Marathon terrorist bombing and subsequent firearms and improvised explosive attacks involving two Massachusetts Institute of Technology students serve as the most recent example of Hybrid Targeted Violence capturing

the attention of a university community (Leonard, H.B., Cole, C.M., & Heymann, P.B.,2014; Urquhart, 2013).

Design

A quasi-experimental post-test-only with control group design was used to determine the influence of various active shooter resilience training programs on college students' perceptions of safety and resilience associated with targeted violence. The research approach incorporated four randomly assigned groups of undergraduate students identified through a convenience sampling method. The groups of approximately 30 students each were categorized DHS Treatment, CPPS Treatment , DHS & CPPS Treatment, and Control Group. Through a post-test-only control group research design, threats to internal and external validity were minimized.

Questions and Hypotheses

RQ 1: What is the independent and combined influence of the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program on university students' sense of personal safety associated with targeted violence?

RQ 2: What is the independent and combined influence of the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program on university students' sense of fear associated with targeted violence?

RQ 3: What is the independent and combined influence of the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program on university students' sense of resilience associated with targeted violence?

H1₁: There will be a statistically significant difference in a student's sense of personal safety after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H0₁: There will be no statistically significant difference in a student's sense of personal safety after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H2₁: There will be a statistically significant difference in a student's sense of personal safety after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H02₁: There will be no statistically significant difference in a student's sense of personal safety after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H3₁: There will be a statistically significant difference in a student's sense of personal safety after completing the DHS "Active Shooter: What Can You Do?" computer-based training course and the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H03₁: There will be no statistically significant difference in a student's sense of personal safety after completing the DHS "Active Shooter: What Can You Do?" computer-based training course and the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H4₂: There will be a statistically significant difference in a student's sense of fear after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H04₂: There will be no statistically significant difference in a student's sense of fear after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H5₂: There will be a statistically significant difference in a student's sense of fear after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H05₂: There will be no statistically significant difference in a student's sense of fear after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H6₃: There will be a statistically significant difference in a student's sense of resilience after completing the DHS "Active Shooter: What Can You Do?" computer-based training

course, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H06₃: There will be no statistically significant difference in a student's sense of resilience after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H7₃: There will be a statistically significant difference in a student's sense of resilience after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H07₃: There will be no statistically significant difference in a student's sense of resilience after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H8₃: There will be a statistically significant difference in a student's sense of fear after completing both the DHS "Active Shooter: What Can You Do?" computer-based training course and the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H08₃: There will be no statistically significant difference in a student's sense of fear after completing both the DHS "Active Shooter: What Can You Do?" computer-based training course and the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active

shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H9₃: There will be a statistically significant difference in a student's sense of resilience after completing the DHS "Active Shooter: What Can You Do?" computer-based training course and the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

H09₃: There will be no statistically significant difference in a student's sense of resilience after completing the DHS "Active Shooter: What Can You Do?" computer-based training course and the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

Participants

Adult undergraduate students over the age of 17 enrolled at a large private university in Virginia participated in this study. The participants were identified through a voluntary solicitation by individual professors. Some professors offered extra academic credit for participation while others did not. Nine undergraduate classes participated in the study. The classes selected were random, and the enrollment of individual students in each class was random based on the order in which each student registered for classes. A total of 136 students agreed to participate and five declined.

Setting

On-campus classroom and computer laboratory facilities were utilized for the administration of the instructional treatments and Student Perception of Personal Safety Survey

(SPPSS) post-test instrument. Students were offered the use of university-owned desktop computers and iPads. The students were also permitted to utilize their personal computers, laptops, and tablets. Each classroom was configured with an overhead projector and screen to present the study instructions. Multimedia classroom technology was also used to expose students to the CPPS training video. Control group participants completed the post-test outside of the classroom based on standardized instructions distributed through Blackboard.

Instrumentation

Each class of students was randomly assigned to a control or treatment group by the primary investigator. Standardized instructions were prepared for each group of participants based on their respective group assignment. All participants received the Student Perception of Personal Safety Survey (SPPSS) post-test web link and completion instructions. A copy of the IRB-approved participant consent form was provided at the beginning of the survey instrument to insure receipt and understanding.

The Student Perception of Personal Safety Survey (SPPSS) instrument measured perceptions of personal safety and resilience associated with targeted violence tactics. The contents of the instrument were derived from the DHS and CPPS treatment post-tests, fear of crime and terrorism survey instruments, and common social science demographic data elements. The underpinnings of the SPPSS are highly diffused post-test and survey programs from respected postsecondary education programs. The SPPSS was comprised of questions categorized in the following unique question sets:

1. Safety and Fear of Violence Question Set
2. Targeted Violence Tactics and Response Question Set-CPPS
3. Targeted Violence Tactics and Response Question Set- DHS

4. Respondent Demographic Information

Safety and Fear of Violence Question Set

This section of the instrument measured the respondents' perceptions of safety and fear of violence in a university environment. This question set contrasted students' perceptions of fear after having been exposed to one or both of the active shooter resilience training program treatments. The control group was administered the SPPSS without prior treatment exposure to establish a comparative acuity measurement of perceived fear.

The measurement of fear methodology and SPPSS question formatting are consistent with published research of fear of crime and terrorism (May et al., 2011; Seo, Blair, Torabi, & Kaldahl, 2004; Warr, 2000). The fear-of-violence question set has been derived from instruments that measured fear of terrorism and crime among university student populations. The "Yes-No" and 5-point Likert (1932) scale questions were modified to specifically focus on targeted violence rather than crime or terrorism. A neutral response of "unsure" was included with each Likert-scaled question. This neutral option increased the fidelity of the SPPSS instrument to capture actual knowledge levels while controlling for random guessing by respondents. The participants' sense of safety and sense of fear were summed to provide scores to be used for in-group and between-group statistical analysis.

Targeted Violence Tactics and Response Question Set-CPPS

This section of the SPPSS instrument measured the respondent's knowledge of targeted violence tactics and appropriate responses in a campus environment. The selected questions were transferred from the CPPS post-test that accompanies the Shots Fired On Campus: When Lightning Strikes (Student Edition) video-based training program. CPPS developed the post-test questions to specifically measure student performance associated with the training program's

learning objectives. The diffusion and refinement of this training program and assessment instrument by hundreds of institutions of higher education over the past 5 years has contributed to the fidelity of the CPPS question set. The only modification to CPPS questions on the SPPSS was the addition of a neutral response option of “unsure.” The neutral option increased the fidelity of SPPSS knowledge-level measurement while controlling for random guessing by respondents. Correct responses on the CPPS question set were combined with correct responses on the DHS question set to establish an active shooter resilience acuity measurement.

Targeted Violence Tactics and Response Question Set-DHS

This section of the SPPSS instrument measured the respondent’s knowledge of targeted violence tactics and appropriate responses in a workplace environment. A subsection of questions was extracted from the DHS post-test that accompanies the Active Shooter: What You Can Do training program. The diffusion of this training program and assessment instrument to tens of thousands of adult learners over the past 3 years has contributed to the reliability and validity of the DHS question set. Based on regular audits, DHS has periodically modified the instrument to address changes in doctrine and test control issues. The addition of a neutral response option of “unsure” was the only modification applied to the selected DHS questions on the SPPSS. The neutral option increases the fidelity of SPPSS knowledge-level measurement while controlling for random guessing by respondents. Correct responses on the DHS question set were combined with correct responses on the CPPS question set to establish an active shooter resilience acuity measurement.

Respondent Demographic Information

This section of the SPPSS instrument collected general demographic information about each respondent to correlate resilience acuity levels with common characteristics of university

students (e.g., academic level, gender, on/off campus living arrangement, type of student, etc.). Additional information was solicited concerning previous relevant training exposures and personal defense tool utilization.

Instrument Administration

Study participants exposed to treatment(s) received the SPPSS through an Institutional Review Board and University-approved online medium. The IRB-approved consent statement was also distributed and briefed to the participants prior to receiving assigned treatment(s). The control group completed the SPPSS instrument without exposure to either treatment.

Participants had the option of using a personal computer, iPad, tablet, or cellular telephone to complete the post-test. Students were only permitted to complete one survey based on a single treatment group assignment. The online survey administration software was configured to prevent duplicate entries and unauthorized access by non-participants.

Procedures

Senior administrators and faculty members of the participating university were engaged to support the study. Once their support was secured, an Institutional Review Board (IRB) application was submitted for review. Following directed revisions, the IRB approved the application in January 2014. All data collected were managed and secured in accordance with the IRB's policies and procedures. The assignment of participants to groups and the standardized instructions provided to those groups are detailed in the aforementioned instrumentation section of this chapter.

Rationale for Post-Test Only

A post-test-only research design was selected to control for threats to internal and external validity caused by treatment biasing exposures to testing materials prior to the treatment.

Further, the prominence of the training programs and availability in the public domain may have resulted in students seeking out one or both of the treatments prior to completion of the post-test. This would have undermined the well-defined and controlled treatment groups.

Concerns over treatment bias and design contamination were ameliorated through closely regulated communication and treatment exposure with the participant population. Data were collected from the control group first to prevent their being exposed to the study treatments through word of mouth exchanges with fellow students. Experimental mortality concerns were also regulated by condensing the time between the treatment and post-test. The post-test-only control group approach was the most rigorous and defensible approach, given the complexity of the population and the treatment delivery modalities.

Data Analysis

Dependent Variables

Sense of safety and perceived risk of victimization by targeted violence: The safety and fear of violence question set on the SPSS instrument measured agreement and disagreement with safety and risk-related statements. Respondents were asked to assess their sense of safety and the likeliness of exposure to violence. The safety-related questions were: (1) I know what to do to protect myself in case of an on-campus life-threatening emergency, (2) I know how to report someone that is acting suspiciously or showing signs of threatening behavior, (3) I know the evacuation routes and procedures for exiting buildings on campus during a life-threatening emergency, (4) I feel that I would be able to help others in a life-threatening emergency event, and (5) I feel that it is my responsibility to know what to do to protect myself in case of a life-threatening emergency on campus. Agreement on the safety questions was summed for each respondent, with a possible score range of 0 to 5.

The fear-related questions were (1) I am afraid of being attacked by someone with a weapon on campus, (2) I am afraid of an active shooter type of event occurring at my university, (3) I am afraid of being the victim of a crime when I am in class, (4) I am afraid of being the victim of a crime on campus when I am not in class (in the cafeteria, library, convocation, etc.), (5) I am afraid of some of my fellow students, (6) I am afraid of a violent event occurring in the town/city where my university is located, (7) I am afraid to attend school events (i.e., football games, concerts, convocation, etc.) because of the risk of being a crime victim, (8) I am afraid that I would not know what to do if an active shooter type of event occurred around me, and (9) I am afraid that my professor and classmates would not know what to do if an active shooter type of event occurred around me. Agreement on the fear questions was summed for each respondent, with a possible score range of 0 to 9.

Sense of resilience associated with targeted violence tactics and response: Resilience from targeted violence was measured using selected DHS and CPPS post-test questions. The questions measured knowledge of recommended strategies and tactics associated with targeted violence. Correct responses on the CPPS question sets were combined with correct responses on the DHS question set to establish an active shooter resilience acuity measurement. Due to test-control restrictions in place by DHS and CPPS, the questions are not detailed in this report. With the approval of DHS and CPPS, they will be made available to support similar research endeavors.

Instrument consistency: Cronbach's alpha found the measurement of personal safety and fear subscale consisted of 14 items ($\alpha = .70$) and the resilience subscale consisted of 26 items ($\alpha =$

.80), which indicated a high level of consistency for the Student Perception of Personal Safety Survey (SPPSS) post-test instrument.

Statistical Procedures

The statistical procedure used in this study was the SPSS two-tailed independent samples t-test to analyze the data in H1 through H9. The purpose of this study was to determine if selected active shooter resilience training programs influenced perceptions of safety, fear, and resilience. Comparing the mean scores of each group with a control group facilitated the measurement of single treatments and combined treatments. The mean scores were derived from question sets on the Student Perception of Personal Safety Survey (SPPSS) post-test instrument. According to Gall (2007), independent samples t-tests are appropriate methods to determine statistically significant differences between groups. The four groups in this study are similar, but not identical, in size, and the participants have been randomly assigned to their respective treatment or control groups. The use of a two-tailed test was both logical and conservative. Every effort was made to avoid overstating the relationship of a treatment to safety, fear, and resilience. The decision to reject or accept the null hypothesis in this study was based on the $p < .05$ level of significance. This level of significance is the standard recommended for quantitative research. The .05 significance level limits to less than 5% the probability of the results being arrived at by chance.

CHAPTER FOUR: RESULTS

The purpose of this study was to determine if there are statistically significant differences in the attitudes of college students regarding their personal safety after participating in widely diffused active shooter resilience training programs. Three research questions shaped the focus of this quasi-experimental study. The underlying hypothesis scrutinized the independent and combined influences of two active shooter awareness training programs on university students' senses of personal safety and on their knowledge-based resilience.

The research approach involved four randomly assigned groups of university students identified through a convenience sampling method. A total of 136 students agreed to participate in the study, and five students declined to participate. The students were randomly assigned to one of four treatment groups. The three treatment groups (DHS training, CPPS training, and DHS+CPPS training) were exposed to training before completing the Student Perception of Personal Safety Survey (SPPSS) post-test. Thirty of the participants were assigned to a control group that received no training before completing the SPPSS post-test (see Table 1).

Table 1

Summary of Participants

DHS “Active Shooter What You Can Do” Treatment	CPPS “Shots Fired on Campus” Treatment	DHS and CPPS Treatment	Control Group No Treatment	Total
29	38	39	30	136

Demographics

Population Adult undergraduate students over the age of 17 enrolled at a large private university in Virginia participated in this study. The participants were identified through a voluntary

solicitation by individual professors. Nine undergraduate classes participated in the study (see Table 2). The classes selected were random, and the enrollment of individual students in each class was the result of individual self-selection, not manipulation by the primary investigator. The gender of the participants was equally distributed, with 68 males and 68 females. The majority of the students lived on campus (83.09%) while the remaining participants lived off campus (16.91%). Race and other personally identifiable data were not collected or analyzed based on the research design.

Table 2

Summary of Participant Class Standing

Freshmen	Sophomores	Juniors	Seniors	Total
84	27	20	5	136
61.7%	19.85%	14.71%	3.68%	100%

Instrument Overview

The Student Perception of Personal Safety Survey (SPPSS) post-test instrument measured personal safety based on the respondent’s sense of personal safety and risk of victimization. A separate resilience score was generated using performance on the SPSS targeted violence tactics and response question set. Cronbach’s alpha found the measurement of personal safety and fear subscales consisted of 14 items, 5 safety and 9 fear items ($\alpha = .70$) and the resilience subscale consisted of 26 items ($\alpha = .80$), which indicated a high level of consistency for the Student Perception of Personal Safety Survey (SPPSS) post-test instrument.

Hypothesis Analysis

To ease interpretation of results, the following hypothesis analysis is presented by group (DHS, CPPS, and DHS-CPPS), contrasted against the control group.

H1₁: There will be a statistically significant difference in a student's sense of personal safety after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

The 29 participants in the DHS treatment group ($M = 4.793$, $SD = .4913$) and the 30 participants in the control group ($M = 3.467$, $SD = 1.306$) demonstrated a statistically significant difference in their sense of safety ($t(37.28) = 5.195$, $p = .000$) as measured by the Student Perception of Personal Safety Survey. Those exposed to the DHS treatment indicated a greater sense of personal safety than those not exposed to a treatment. Therefore, the null hypothesis is rejected

H4₂: There will be a statistically significant difference in a student's sense of fear after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

The 29 participants in the DHS treatment group ($M = 2.207$, $SD = 2.664$) and the 30 participants in the control group ($M = 2.1$, $SD = 2.073$), demonstrated no statistically significant difference in their sense of fear ($t(52.84) = .171$, $p = .864$), as measured by the Student Perception of Personal Safety Survey. Those exposed to the DHS treatment and those exposed to no treatment indicated similar senses of fear. Therefore, the null hypothesis cannot be rejected.

H6₃: There will be a statistically significant difference in a student's sense of resilience after completing the DHS "Active Shooter: What Can You Do?" computer-based training course, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

The 29 participants in the DHS treatment group ($M = .6652$, $SD = .29$) and the 30 participants in the control group ($M = .647$, $SD = .1676$) did not demonstrate a statistically significant difference in their sense of resilience ($t(57) = .451$, $p = .0654$). In comparison with the control group, the DHS treatment resulted in only slightly higher levels of resilience in participants, as measured by the Student Perception of Personal Safety Survey. Therefore, the null hypothesis cannot be rejected.

H2₁: There will be a statistically significant difference in a student's sense of personal safety after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

The 38 participants in the CPPS treatment group ($M = 4.579$, $SD = .5987$) and the 30 participants in the control group ($M = 3.467$, $SD = 1.306$) demonstrated a statistically significant difference in their sense of safety ($t(38.588) = 4.32$, $p = .000$), as measured by the Student Perception of Personal Safety Survey. Those exposed to the CPPS treatment indicated a greater sense of personal safety over those not exposed to a treatment. Therefore, the null hypothesis is rejected.

H5₂: There will be a statistically significant difference in a student's sense of fear after completing the CPPS "Shots Fired On Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

The 38 participants in the CPPS treatment group ($M = 3.026$, $SD = 2.41$) and the 30 participants in the control group ($M = 2.1$, $SD = 2.074$) demonstrated no statistically significant

difference in their sense of fear ($t(66) = 1.672, p = .099$), as measured by the Student Perception of Personal Safety Survey. Those exposed to the CPPS treatment indicated an elevated but statistically insignificant sense of fear over those not exposed to a treatment. Therefore, the null hypothesis cannot be rejected.

H7₃: There will be a statistically significant difference in a student’s sense of resilience after completing the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

The 38 participants in the CPPS treatment group ($M = .7218, SD = .11955$) and the 30 participants in the control group ($M = .647, SD = .1676$) demonstrated a statistically significant difference in their sense of resilience ($t(66) = -2.148, p = .035$); as expected, the CPPS treatment resulted in higher levels of resilience, as measured by the Student Perception of Personal Safety Survey. Therefore, the null hypothesis is rejected.

H3₁: There will be a statistically significant difference in a student’s sense of personal safety after completing the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

The 39 participants in the DHS-CPPS treatment group ($M = 4.846, SD = .3655$) and the 30 participants in the control group ($M = 3.467, SD = 1.306$) demonstrated a statistically significant difference in their sense of safety ($t(67) = 5.618, p = .000$), as measured by the Student Perception of Personal Safety Survey. Those exposed to both the DHS and CPPS

treatment indicated a greater sense of personal safety over those not exposed to a treatment. Therefore, the null hypothesis is rejected.

H8₃: There will be a statistically significant difference in a student’s sense of fear after completing both the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program, as measured by the fear of violence question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

The 39 participants in the DHS-CPPS treatment group ($M = 2.128$, $SD = 2.262$) and the 30 participants in the control group ($M = 2.1$, $SD = 2.074$) did not demonstrate a statistically significant difference in their sense of fear ($t(67) = .053$, $p = .958$), as measured by the Student Perception of Personal Safety Survey. Those exposed to both the DHS and CPPS treatments and those exposed to no treatment indicated similar senses of fear. Therefore, the null hypothesis cannot be rejected.

H9₃: There will be a statistically significant difference in a student’s sense of resilience after completing the DHS “Active Shooter: What Can You Do?” computer-based training course and the CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” active shooter awareness program, as measured by the targeted violence tactics and response question set on the Student Perception of Personal Safety Survey (SPPSS) instrument.

The 39 participants in the combined DHS and CPPS treatment group ($M = .7592$, $SD = .13364$) and the 30 participants in the control group ($M = .647$, $SD = .1676$) demonstrated a statistically significant difference in their sense of resilience ($t(67) = 3.096$, $p = .003$); as expected, the combined DHS and CPPS treatment resulted in higher levels of resilience, as

measured by the Student Perception of Personal Safety Survey. Therefore, the null hypothesis is rejected.

Summary

The three research questions that framed this study intended to quantify the influence of each active shooter awareness training program on university students’ senses of safety, fear, and resilience. The study also examined the influence the two training programs had when students were exposed to both prior to completing a post-test assessment. The findings of the research suggest that active shooter awareness training programs do positively influence students in a way that better prepares them to identify, report, react to, and recover from an active shooter incident (see Table 3).

Table 3

Comparison of Treatment Group’s Safety, Fear, and Resilience Scores

Variable	DHS (N=29)		CPPS (N=38)		DHS & CPPS (N=39)		Control Group (N=30)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Safety	4.793	.4913	4.579	.5987	4.846	.3655	3.467	1.306
Fear	2.207	2.6643	3.026	2.4104	2.128	2.2616	2.0736	.3786
Resilience	.6652	.14035	.7218	.11955	.7592	.13364	.6470	.1676

The rational design and analysis associated with this study provides a more evidence-based foundation upon which to make decisions associated with student, faculty, and staff safety training. A common theme detected across the three treatment groups and control group was a near universal agreement that some form of training is needed. A significant number of the 136 participants, 97.06%, agreed or strongly agreed with the statement “training is needed to prepare students for emergency events on campus (fire, active shooter, etc.)”. This receptivity suggests a

Maslowian (1954) personal-safety-based motivation in the training as well as a positive andragogical attraction to active shooter awareness training. Under Knowles's principles of adult learning, university students may be ready, oriented, and motivated to learn active shooter resilience skills (Knowles et al., 2012). Not taking advantage of this appetite for learning not only misses an opportunity to teach skills that may foster self-preservation, but also deprives students of skills that may allow them to help their fellow students, co-workers, family members, and strangers when encountering targeted violence.

The analysis of each treatment revealed statistically significant influences on select measured variables. The DHS "Active Shooter: What Can You Do?" computer-based training course had a substantial influence on a student's sense of safety; a statistically significant influence on the sense of fear and resilience, however, could not be achieved based on the $p < .05$ level of significance. The CPPS "Shots Fired on Campus: When Lightning Strikes (Student Edition)" active shooter awareness program, indicated a significant influence over students' perceptions of safety and resilience, but not fear. Participants seemed drawn to the CPPS video that was based in a college environment that was similar to the environment in which the participants lived, studied, and socialized.

The combined influence of the DHS and CPPS training programs revealed a statistically significant influence on safety and resilience but not on fear. It should be noted that the largest effect on both safety and resilience, in contrast with the control group, was achieved with the combined DHS and CPPS treatment exposure. Advancing resilience, knowledge of how to identify, report, and react to incidents of targeted violence, should reduce the lethality of an attack, should one occur.

The perceptions and measured resilience of the control group are important, not only in comparison with treatment groups, but they also may be indicative of college students in general. The lower safety, fear, and resilience scores of the control group suggest an area of potential improvement through awareness training, practical exercise, and a meaningful dialogue that values safety on campus and off. The control group's tendencies in comparison to the treatment groups were deficient and potentially inhibiting in the event of an actual exposure to targeted violence.

CHAPTER FIVE: DISCUSSION

The problem addressed in this study was the lack of evidence-based research regarding the influence prominent active shooter awareness training programs may have on the perceived safety and resilience of college students. The research focus of this dissertation was inspired after analyzing hundreds of active shooter and hybrid targeted violence events. Two common themes emerged from anecdotal post-event analysis. The first was that potential victims that had been exposed to training before the event often credited that training with giving them a lifesaving response strategy. Secondly, and most troubling, was the anecdotal finding that many victims of active shooter incidents may have survived had they been trained to react immediately to a threat, to know in advance where exits were located, and to make appropriate decisions to run, hide, or fight when exposed to an attack. Paralysis from panic in an active shooter event is just as deadly as paralysis during a dorm fire. Effective training and education are a logical approach to build resilience. The focus of this dissertation was the assessment of prominent training and education programs. The findings strongly suggest that higher education administrators and public safety leaders should invest in training and education to build student, faculty, and staff resilience to active shooter events.

A quasi-experimental post-test only control-group design study was conducted to advance this potentially lifesaving educational activity. The DHS “Active Shooter: What Can You Do?” computer-based training and CPPS “Shots Fired On Campus: When Lightning Strikes (Student Edition)” video-based active shooter awareness programs were the independent variables in this study. The intention of the study was to determine the influence of various active shooter awareness training programs on college students’ perceptions of safety and resilience. The study found evidence that suggests the DHS and CPPS training programs do

affect a positive influence on college students. Through a post-test survey of 136 college students, the nature of the training influence was measured and categorized by the participant's sense of safety, sense of fear, and resilience.

Summary of Research Results

The three research questions that framed this study quantified the influence of each active shooter awareness training program on university students' senses of safety, fear, and resilience. Through a structured statistical analysis of post-test data, the independent and combined influence of the DHS and CPPS training programs were contrasted with a control group population. Statistically significant relationships between the training programs and the student's sense of safety, sense of fear, and resilience were identified in whole or in part with each training program.

Analysis of the DHS "Active Shooter: What Can You Do?" computer-based training course revealed a substantial influence on a student's sense of safety. However, a statistically significant influence on sense of fear and resilience could not be achieved based on the $p < .05$ level of significance. The two-tailed research design was intended to capture positive and negative influences from each treatment. This conservative statistical approach may have diminished the determination of statistical significant influence on fear and resilience had a one-tailed approach been used. Nevertheless, the DHS training program's merit was recognized. The program's focus on active shooter events in the workplace, rather than in an academic environment, may have diminished the participants' ability to tightly connect the lesson with their environment as college students.

Analysis of the CPPS "Shots Fired on Campus: When Lightning Strikes (Student Edition)" active shooter awareness program indicated a significant influence over students'

perceptions of safety and resilience, but not fear. The CPPS training was designed specifically for students, faculty, and staff in higher education; therefore, it appeared to strongly capture the interest of the participants who received the training. The tenets of Knowles's adult learning principles seemed to be influential factors in the design of the CPPS training course. University students appeared interested, motivated, and connected with the CPPS training format.

The empirical analysis of the combined influence of the DHS and CPPS training programs also revealed a statistically significant influence on the students' sense of safety and resilience, but not their sense of fear. As mentioned in chapter 4, participants exposed to both training programs realized the largest positive effect on both safety and resilience. The college and workplace active shooter violence environmental issues covered by both programs may have provided a wider array of "if-then" scenarios for the student to consider and understand. The preventative measures addressed in both courses may also provide a more influential learning experience to understand how to recognize and report potential threats before they manifest.

Statistically insignificant findings associated with each training program's influence on perceived fear merit further study. An item analysis of the fear-of-violence question set indicated a need to explore in detail individual fear and altruistic fear. Varying levels of concern for self and concern for others are perspectives that may account for measured differences between treatment groups. A positive finding of this study was the lack of a significant influence by the DHS and CPPS programs on self-assessed levels of fear. Artificially inflating fear in students would likely impede their ability to retain lessons intended to increase their resilience. This facet of the research merits cautionary conclusions and underscores the need for further research.

Implications

The positive influence of the DHS and CPPS training programs on students' senses of safety and resilience can be attributed to the effective application of Malcolm Knowles's six principles of adult learning (Knowles et al., 2012). The 136 student participants brought a high level of interest in active shooter resilience training programs, with over 97% of the participants reporting that such training was needed. This interest level likely stimulated the participants' internal motivation and self-direction to want to receive the training that was being offered. The young adult participants brought specific and general life experiences that allowed them to digest the lessons conveyed in the individual and combined treatment groups. As Knowles suggested, adult learners want to know how to deal with real-life problems. Active shooter events are very real and, evidenced by numerous media reports, college students are aware of their frequency and lethality.

Knowles's fourth principle of adult learning underscored the importance of lessons being relevant to the student. In the case of an active shooter or incidents of targeted violence, most college students agree that they want to avoid such an event. If they are confronted with such an event, they want to survive rather than be a victim. The relevancy orientation of the DHS and CPPS training programs is achieved through engaging multi-media lessons. Both training programs begin with dramatic audio that simulates an actual active shooter event unfolding. This attention grabbing approach is compounded by the students' internal motivation and interest in the subject matter.

Knowles's fifth principle appreciated the practical nature of adults. Adults desire to apply new knowledge to their immediate environment. A lesson that conveys the importance of identifying exits to a room or building can be immediately processed in terms of the room or

building that the student currently occupies. Suggesting that students continuously consider where exits are located is a lesson that can be applied as the students move through their on and off-campus environments. The practicality of these resilience-building lessons is likely to be met with receptivity on the part of the adult learner.

Finally, Knowles's sixth principle underscores the importance of adult learners feeling respected when engaged in an educational pursuit. The DHS and CPPS training programs set a professional tone of respect and empowerment towards the learner. This empowerment is not only directed at the students as they participate in the training; empowerment refers to the time when the students are in a position to identify, report, or respond to an active shooter event. Both training programs recognized the value of law enforcement responders to neutralize an active shooter threat, but they do not abandon the power and control a potential victim may have when confronted with an active shooter threat.

Each of Knowles's (1984) six principles of adult learning is distinguishable in the DHS and CPPS course interactions. The safety, fear, and resilience outcomes measured through the post-test survey instrument suggested that both courses, in varying degrees, resulted in a transfer of knowledge or change in attitude on the part of the student. The combination of both DHS and CPPS training programs appeared to have the greatest impact on the resilience component of this study.

There are two powerful forces being exerted by the federal government with respect to criminal justice research and campus safety. The first is a movement towards evidence-based research to support programmatic decisions. The National Institute of Justice, the criminal justice research component of the U.S. Department of Justice, has encouraged practitioners and researchers to embrace quantitative research standards over qualitative research standards (NIJ,

2014). In a period in which fiscal resources to support operations and research are constrained, it is imperative that investments be based on scientific standards of analysis, rather than subjective and emotion-driven decision making. An emotional or politically motivated desire to do something to make people feel good is insufficient when a problem, such as targeted violence, has life-threatening consequences. The disciplines of fire science and emergency management would not promulgate untested training and technical programs. Educational leaders should seek the same evidenced-based standard when implementing training and technical programs to build resilience against targeted violence.

The second powerful force exerted by the federal government is a desire to develop campus resilience at all levels of the education spectrum. Acts of deadly targeted violence have impacted primary, secondary, and higher education institutions. Efforts led by President Obama and his predecessors have invested considerable public resources to address mass shootings and hybrid targeted violence at schools, at houses of worship, and in public spaces (DHS, 2013b; Schweit, 2013). The DHS Active Shooter training program and the wide variety of resources available to educate and inform educational leaders has been met with strong public demand and interest. Following an active shooter event, interest in the free DHS Active Shooter Training program has spiked. The same is true of the CPPS Shots Fired on Campus training program.

Risk mitigation focused institutions of higher learning have recognized a responsibility to expose faculty, staff, and students to effective resilience building training programs. Heretofore, the influence of these programs had only been measured by a knowledge-based post-test. Expanding the lens of study to assess perceived safety and a sense of fear adds to the understanding of how these programs positively or negatively influence those who participate in them. Retrospective analysis following an averted or actual active shooter event is an area of

research that has been explored by others (Blair et al., 2013; Dishman, Lewis, & Pepper, 2011; Layden, 2010; Swezey & Thorp, 2010). However, these types of exceptional After Action Reviews merit considerable expansion through future qualitative research that brings practitioners, academicians, and policy makers together. Comprehensive thematic analysis can contribute to a better understanding of resilience education challenges and opportunities.

The instructional systems designers from DHS and CPPS have taken advantage of technology to facilitate meaningful learning through internet-based forums. High levels of student interest can be channeled through effective online learning tools to produce higher levels of knowledge and awareness associated with personal safety. This study only examined self-paced learning modalities. The effectiveness of instructor-led and blended learning modalities with the DHS and CPPS programs may yield different results. The vast majority of the participants that have completed these training programs did so in a self-paced online environment. The research methods selected for this study reflected the majority of the constituent training population but it did not cover all educational approaches available from DHS and CPPS.

Limitations

Active shooter events and incidents of targeted violence are both rare and real. This narrowly focused study underscored the potential benefit effective training programs may have on potential victims of seemingly unpredictable events. Accurate predictions of when and where the next active shooter event will occur are virtually impossible. However, predictions can be made with absolute certainty that active shooter events will continue to occur in schools, workplaces, shopping centers, and other public gathering places.

The findings of this study may not be representative of the findings from other universities. While every effort was made to draw a broad sample and randomly assign participants to treatment groups, there are inherent limitations in quasi-experimental research. The group size selected was sufficient to make evidenced-based empirical conclusions based on prevailing quantitative research methods. However, there are numerous variables that may influence individuals or student populations. The most significant factor may be a student's direct or indirect exposure to violence in the past. An extreme example would be a survey population drawn from a university that had just experienced an incident of targeted violence. Receptivity to the training, opinions concerning fear of crime, and personal safety may all lead to different results with the same treatment programs and research design used in this study.

Recommendations for Higher Education Administrators and Law Enforcement

Higher Education Administrators.

Administrators in higher education are empowered to set policy, direct resources, and facilitate conditions that develop resilient learning communities. The optimization of learning and safety are not mutually exclusive goals. Instead, these goals must be interwoven pursuits that influence short, mid and long-term campus resilience strategies. Higher education communities are potential "soft targets" for those who seek to cause harm with minimal risk of an immediate forceful response. Identifying threats before they manifest and preparing potential victims to respond to the myriad of life-threatening circumstances on campus can be achieved without instilling fear. Targeted-violence resilience education efforts led by higher education administrators should be similar to those used by the commercial airline industry and fire safety community to reinforce lifesaving lessons in a meaningful and effective way.

Based on the findings of this research, it is recommended that higher education administrators include targeted violence in their all-hazards emergency management plans. Historical emphasis placed on fire safety (e.g., education, alarms, fire suppression equipment, and evacuation drills) serves as a model to consider for targeted-violence threat identification, mitigation, and response. The inclusion of mandatory active shooter awareness training programs in new student orientations and annual faculty and staff assemblies is highly encouraged. General active shooter awareness training principles and campus response protocols should be reinforced in detail on an annual basis with students. Effective and affordable online and self-paced training, such as the DHS and CPPS programs examined in this study, can reduce barriers to conducting initial and refresher training. Impediments to implementing these resilience solutions in the past appear to be more philosophical than practical. A “do nothing” philosophy cannot be defended.

Political jurisdictions and institutions of higher education that have permissive concealed weapons laws and policies are positioned both to rapidly interrupt a deadly threat in progress and to experience friendly fire situations. While the former is highly desirable, the latter is extremely problematic for armed first responders. If concealed weapons are permissible, or if an educational institution has a population of armed law enforcement personnel in civilian attire, consideration should be given to exposing that population to the civilian-response-to-armed-encounters concepts recommended by Blair et al. (2013, p. 186-199). Formalized training and guidance for non-law enforcement personnel who carry firearms, especially faculty and staff, will allow those individuals to serve as defensive force multipliers rather than liabilities during the period when law enforcement arrives on the scene of a targeted violence event. A rapid lethal response to a lethal threat, by any capable individual, will limit the impact of an attack. A

rapid defensive response may also protect potential victims from exposure to an attack. De-confliction of friendly armed personnel is critical within and beyond the law enforcement community. Simply disarming potential victims should not be considered a complete solution on the part of policy makers.

Administrators should consider requiring all-hazards response education sessions, led by residence hall advisors and professors, that reinforce general campus threat reporting and threat response guidelines. This initiative should be harmonized with current fire safety, natural disaster, and related education activities. For example, on the first day of each class, in addition to reviewing the course syllabus, professors should provide a brief standardized reminder of all-hazards response protocols with a strong message that empowers students to alert others if they detect a potential safety issue. Professors, who likely have years of experience working in a particular academic building, should orient students to all nearby exits and secure areas to shelter. Most students will have environmental awareness that is limited to the building entrance, corridors, and classrooms that they typically use. In a crisis, this limited frame of reference may impede lifesaving evacuation and sheltering options. Professors should offer students some “if-then” guidance that is unique to their respective learning environment. A derivative benefit of this environment-specific safety training will be to condition students to proactively seek out alternative exits and sheltering locations in other spaces that they frequent (i.e., dining facility, library, athletic buildings, etc.) before they are needed.

The effectiveness of campus alert and warning systems may be limited when classes are in session. Many warning systems depend on social media and internet-based broadcast messages that can go undetected by educators and students engaged in a classroom or laboratory environment. All faculty, staff, and students should be empowered to immediately alert others to

a potential threat when it is received. Expediting knowledge and awareness of a life-threatening condition will expedite the effective response to that threat (Bruyelle, O'Neill, El-Koursi, Hamelin, Sartori, & Khoudour, 2014). These systems should be tested through drills and exercises that have empirical performance metrics.

Finally, higher education administrators must conduct regular assessments of their policies, procedures, and resources associated with all-hazards threats. Simply having a policy on record or a document on a website is insufficient. Administrators must actively assess and practically apply their response strategies. Faculty, staff, and students are the ultimate sources of early-warning threat identification and critical-incident event information. The fidelity of the information and action taken by individuals is dramatically increased when they know what to look for and how to respond to it. Complacency by higher education administrators towards fire safety would not be legally or morally tolerated. The same rational standard should apply to resilience-building initiatives intended to address hazards associated with targeted violence.

Law Enforcement.

Most campus and municipal law enforcement agencies have implemented regular active shooter awareness training requirements. These initiatives have been based on actual events of targeted violence and the lessons derived from them. Rapid response and engagement by law enforcement personnel has been the exclusive focus of most active shooter education programs. These investments in time and resources are justified and commendable. They are likely to realize positive effects in the 51% of active shooter events that end once police arrive on the scene. They are unfortunately not relevant in the significant number of events, 49% according to Blair et al. (2014), that begin and end prior to arrival of law enforcement. The expertise of law

enforcement professionals can and should be leveraged to build more resilient faculty, staff, students, and non-law-enforcement first responders.

Active shooter training resources are commonly directed towards the first responder community rather than civilian populations. Training generally focuses on tactics and mass casualty incident management. The importance of coordinated public safety responses to incidents of targeted violence that may involve the use of firearms, edged weapons, improvised explosive devices, barricading tactics, ambush tactics, and fire as a weapon, requires new levels of cooperation. Furthermore, the simultaneous or parallel ability to neutralize a threat and stop the loss of life requires paradigm shifting vision (Frazzano & Snyder, 2014). Law enforcement practitioners are uniquely positioned to share knowledge across public safety domains and with civilians who may contribute to limiting the loss of life during a time of crisis. The “Whole of Community” concept of response and resilience building advanced by FEMA (2013) should drive strategies associated with targeted violence and mass casualty events.

The skill, influence, and legitimacy of law enforcement agencies should be leveraged when developing training strategies to educate higher education communities on active shooter and targeted violence resilience protocols. Law enforcement officers can build trust, confidence, and knowledge among faculty, staff, and students through targeted violence resilience training. Strengthening lines of communication between law enforcement and the communities they serve may mitigate fear and maximize the sharing of information before an attack occurs.

The conduct of exercises and drills associated with active shooter events in education settings are usually limited to law enforcement responders at times when students, faculty, and staff are not present. These exercise scenarios usually assess the law enforcement response, not the response of faculty, staff, and students. It is recommended that the inclusion, in training

scenarios, of those likely to be victimized by targeted violence attacks will yield a better impression of capabilities and areas in need of improvement. Training and exercise scenarios should also examine the neutralization of a threat with mass casualties present prior to a law enforcement response. Many active shooter exercises do not resemble common conditions observed in actual events. An attacker neutralized by victims or by suicide is a common scenario that is rarely tested by first responders. The application of emergency medical interventions is also rarely a component of scenario-based exercises.

Law enforcement, fire, and EMS must be conditioned to work together to limit the loss of life in both “hot” and “warm” zones. Leveraging trained and untrained civilians to provide emergency medical aid to victims is a lifesaving force multiplier. The civilian response to the Boston Marathon bombing is a remarkable example of civilians taking decisive action in concert with first responders to aid and evacuate critically wounded victims (Leonard, Cole, & Heymann, 2014). Campus law enforcement leaders must broaden their approach to training for active shooter events. Campus resilience is a weight that should be borne by the entire community, not just the community of first responders.

Law enforcement leaders are the natural point of focus to develop and apply response strategies for active shooter events on college campuses. They must look beyond their individual armed response function to contemplate community-wide strategies that build resilience. Campus safety education campaigns that include active shooter awareness training may reap benefits that extend beyond the campus environment. Preparing faculty, staff, and students to identify and respond to threats from all hazards on campus will better prepare them to deal with similar hazards off campus.

Recommendations for Future Research

An appreciation for risk should inspire an interest in risk mitigation and resilience-building strategies. Therefore, the field of study associated with active shooter and targeted violence resilience in institutions of higher learning merits considerable attention. Educational leaders, policy makers, public safety leaders, and the general public, all have vested interests in protecting students, those who teach them, and those who support them. While not the focus of this study, the need for evidence-based research in primary and secondary educational settings should be given a high priority. Law enforcement and military professionals have embraced the importance of training to deal with life-threatening high-risk, low-frequency conditions. Decision makers and thought leaders in private and public education institutions are well positioned to advance similar training priorities for students, faculty, and staff.

Two participants in this study had encounters with targeted violence in educational environments. Weeks prior to this study, one of the students was close to a fatal shooting of a violent intruder that occurred outside of a dorm room. The participant professed that previous training and the training received as part of this study were crucial to provide college students with an understanding of how to respond and react. A second student in this study had been in close proximity to a recent elementary school shooting that resulted in twenty-six deaths. That participant experienced the aftermath of fear, hyper-vigilance, and efforts by school leaders to train students and teachers to protect themselves. That participant echoed the importance of training students in a college environment to recognize threats, report them, and in the event of an attack, to know what to do. While these two students offered experiential, not scientific, insights, the relevance of their experience and their recommendations are too powerful to ignore.

Further research concerning active shooter resilience and awareness programs should consider the educational benefits of progressive longitudinal approaches. Elementary, middle, high school, and university students have different levels of maturity and receptivity to life safety lessons. Ideally, active shooter resilience education programs will follow a hierarchy, with one level building on the next. Future studies should also consider the training needs of faculty and staff. At lower grade levels, resilient faculty and staff will be better prepared to protect those who cannot protect themselves. At higher grade levels, resilient faculty and staff will contribute to more resilient organizations and communities. Andragogical, not pedagogical, approaches should underpin the development and delivery of active shooter resilience lessons for mature students and adults.

Conclusion

In a perfect world, everyone would enjoy higher levels of knowledge and resilience associated with active shooter events. In the real world, it is expected that receptivity to these lessons will vary. Research shows that during critical events it takes only a small number of people to lead and help others who lack the knowledge, skills, and abilities to help themselves. One person in a classroom who immediately recognizes and articulates to the class that the noise they just heard may have been a gunshot could be the person that removes that class from the crosshairs of a shooter. It is difficult to not return to the analogy of fire safety drills and fire safety education. Educators have inculcated fire detection and fire alarm responses in children since the first day they begin their formal education. Educators should be offering similar, age-appropriate active shooter resilience lessons. The lessons should be crafted to instill a heightened sense of awareness, rather than an unnecessary and counterproductive sense of fear. Fear is not necessarily bad when paired with lessons that bolster an individual's sense of safety and

knowledge of how to react. Substantial study is needed to determine how to strike this balance in a meaningful and lasting way.

All men, women, and children deserve a safe environment in which to learn and work. Unfortunately, mentally ill and criminally motivated persons are present in urban, suburban, and rural communities. Those who seek to harm others through targeted violence often seek the most vulnerable victim populations. Unarmed, unsuspecting, and accessible victims are usually the targets of these attacks. Building a shield of resilience that mitigates the lethality of these events should be an objective shared by all. Closing the reactionary gap between hearing an attack begin and taking effective protective action can only be instilled through effective training.

Developing policies and exercises to test these resilience skills is necessary. Failure to train, failure to educate, and failure to prepare for these catastrophic events will only favor the success of the attacker. A resilient campus may not be able to avoid an attack, but it will certainly be a harder target. A university environment should be one of openness, comfort, and intellectual freedom. Locks on doors, alert and warning systems, armed police officers, and resilient students do not detract from the educational experience. Instead, they contribute to lifelong lessons that rationally harmonize personal safety and success.

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APPENDICES

APPENDIX A: IRB Application

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

January 9, 2014

George Matthew Snyder
IRB Exemption 1757.010914: The Effects of Active Shooter Resilience Training Programs on
College Students' Perceptions of Personal Safety

Dear Matt,

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

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

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

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

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

Sincerely,

Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling

(434) 592-4054

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APPENDIX B: Consent Form

Consent Form

THE EFFECTS OF ACTIVE SHOOTER RESILIENCE TRAINING PROGRAMS ON COLLEGE STUDENTS' PERCEPTIONS OF PERSONAL SAFETY

G. Matthew Snyder
Liberty University
School of Education

You are invited to be in a research study of university students' perceptions of personal safety relating to on-campus violence and the influence of related training programs. You were selected as a possible participant based on your current enrollment in a Liberty University undergraduate or graduate course. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by George Matthew (Matt) Snyder, a doctoral candidate, in Liberty University's School of Education. The study is under the direction of Dr. David Holder (Faculty Advisor, Liberty University, School of Education).

Background Information:

The purpose of this study is to determine if there are differences in the attitudes of college students regarding their personal safety after participating in widely used active shooter resilience training programs.

Procedures:

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

1. Register to participate through the link provided by your professor in LU's Blackboard.
2. If selected, complete the online training course(s) in its entirety. Each course will take approximately 20 minutes. The courses will be offered via distance learning or in a proctored classroom environment.
3. Complete the post-test survey quiz. Nominal extra credit may be granted by professors based on the student's performance on the quiz. Other sources of extra credit may be available at the discretion of the professor. **Pay attention, work on your own, use only the material provided, and do your best to earn the most extra credit possible!** "Unsure" responses do not impact the final score. Only one survey quiz may be taken by each student. The quiz will take approximately 25 minutes to complete.

Risks and Benefits of Being in the Study:

Risks: The study has no known significant risks. Participation in the study will be conducted in a remote (home) or classroom environment. Participation will require the completion of a computer-based survey and observing computer based training that has no record of harming participants. Both treatments have

hundreds of thousands of participants with no known physical, psychological, or spiritual adverse impact. Some participants may have been exposed directly or indirectly to violence in the past. If you are disturbed or upset by the treatments or survey, you may immediately opt out of the study.

Benefits: Participants may develop new knowledge that enhances their personal safety and ability to respond to and avoid dangerous situations involving targeted violence.

Compensation:

You will receive no financial compensation for your participation. You **may** receive nominal extra credit for completing the post-test survey quiz. The level of credit awarded will be based on your performance on the quiz. Credit will only be given to those who complete the registration, treatment(s) if applicable, and post-test survey. Other sources of extra credit may be available from your professor in accordance with the course syllabus.

Confidentiality:

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify you as a research subject. Research records will be stored securely and only the researcher will have access to the records. Once the post-test data is aggregated by the researcher, participant names will be purged from the data archive.

Voluntary Nature of the Study:

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

Contacts and Questions:

The researcher conducting this study is Matt Snyder. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at gmsnyder2@liberty.edu or 540 664 0255 (cell). The faculty advisor, Dr. David Holder, for this project may be reached at deholder@liberty.edu.

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, Suite 1837, Lynchburg, VA 24515 or email at irb@liberty.edu.

IRB Code Numbers: IRB Exemption 1757.010914:

IRB Expiration Date: January 8, 2015