

To the Graduate Council:

I am submitting herewith a dissertation written by John Eric Powell entitled "Terrorism Incident Response Education for Public-Safety Personnel in North Carolina and Tennessee: An Evaluation by Emergency Managers." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

Russell L. French, Major Professor

We have read this dissertation
and recommend its acceptance:

Ralph Brockett

Edward Counts

Robert Levey

Judith Boser

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean
of the Graduate School

Terrorism Incident Response Education for Public-Safety Personnel in North Carolina and
Tennessee: An Evaluation by Emergency Managers

A Dissertation

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Doctor of Philosophy Degree

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John Eric Powell

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DEDICATION

John L. and Gloria H. Powell are the reasons for this dissertation's being completed. Every son should have parents like the ones I was blessed with. If I am successful with this endeavor, the basis of success comes from them. They have always encouraged me and been there throughout my educational process, marriage, divorce, sicknesses, injuries, and surgeries. I cannot think of anyone who has been as blessed as I have been to have had two such terrific parents.

It was an opportune occasion for me when I met Carol while I was teaching at Western Carolina University. It is my sincere hope that this terminal degree endeavor will allow me to make our years together much better. Quality of life is important, and Carol's presence in my life is a quality-of-life issue. Her son Randy has brought a lot to our new small family; I appreciate his friendship a great deal and feel privileged to be his advocate. He is a top-shelf young man.

Jimmy Holt is the brother I never had. I cannot count the times that Jimmy has been there for me to encourage, laugh with, and gain counsel from. I am lucky to have him as family. He is the only person other than my parents and Carol that I want at my graduation.

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Dr. Russell French heads this list. I remember being a firefighter and a flight paramedic early in my doctoral endeavors. Even prior to the events of 11 September 2001, I was interested in how we train public-safety first responders for terrorism events and was very fortunate to find Dr. French. When I approached him about my research interests, he did not bat an eye. Not only was he encouraging about my research topic, but he was able to show me how it could be an important contribution to the field of educational evaluation. We both knew that there was a paucity of resources on my research topic; that was never a barrier for Dr. French, who encouraged and pushed me to finish the doctoral program. He saw me through a divorce and a couple of very serious surgeries, supporting me every step of the way. I will never forget that. He is a man of remarkable character and integrity, and I am blessed to have had a chairperson like him in my corner. Thank you, Dr. French.

I consider Dr. Ralph Brockett, the most demanding professor I have ever had, and it is this demanding nature of academic standard in the education profession that I value the most. I asked Dr. Brockett to be on my committee as I knew that if my work satisfied him, that I would survive the process. He is demanding, however, he is the kindest professor in the classroom I have ever had. I know that his demeanor during his course facilitation has encouraged countless adults to continue their education. What a great legacy. Thank you, Dr. Brockett.

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ABSTRACT

The purpose of this study was to evaluate the appropriateness and sufficiency of an existing course jointly created by the United States Department of Justice, the National Fire Academy, and the Federal Emergency Management Agency entitled *Emergency Response to Terrorism: Basic Concepts*. The survey groups chosen for this evaluation included the 194 emergency managers for the two states of North Carolina and Tennessee.

The return rate for the descriptive survey study was 53.6 percent (n=104). This return rate was accomplished via two mailings and telephone interviews.

Overall, the respondents felt that the five main course topics (Understanding and Recognizing Terrorism, Implementing Self-Protective Measures, Scene Control, Tactical Considerations, and Incident Management Overview) were appropriate and important, although appropriateness scores were not as strong as those for importance.

It was found that the majority of the respondents were utilizing the course as an entry-level course to better enable their first responders to respond to terrorism incidents.

When asked about the preferred method of course delivery, the majority of the respondents indicated that they thought the traditional classroom course was better than the computer-based instruction version. The main reason mentioned for the choice was the collective experience of all learners when they came together in a group to share past experiences and submit ideas.

Some relationships between size of county population and threat of terrorism as well as population size and public safety personnel seeking out courses to better enable them to respond to terrorism incidents.

The study was limited to the states of North Carolina and Tennessee and would need to be replicated to generalize findings beyond these states.

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CHAPTER ONE

OVERVIEW OF THE STUDY

1.1 Background

The United States Federal Bureau of Investigation defines terrorism as “the unlawful use of force or violence against persons or property to intimidate or coerce a Government, the civilian population, or any segment thereof, in furtherance of political or social objectives” (Zalman, 2008). Marks (2002) adds,

Terrorism is a war against our very way of life; it seeks to destroy our freedoms by killing our civilians. It seeks to strip us of the benefits of civilization by making us afraid. This goal is pursued through chilling, often mind-boggling brutality. Like a drug addiction, terrorist attacks continually try to exceed prior incidents. The result is violence that continues to challenge our sense of the impossible (p. xi).

The events of the Oklahoma City bombing in 1999, and the events of September 11, 2001, were quite remarkable in the sense that never before had public safety entities in the United States been responsible for the “initial response to such incidents involving weapons of mass destruction, [nor had they been] trained to recognize and initiate appropriate actions to save lives, stabilize the incident, and protect property” (Player, 2000, p. 6).

The public safety professions, including first responders (personnel working with emergency medical services, the fire service, and law enforcement) have been given the responsibility of managing and mitigating terrorism incidents in the United States brought about by international or domestic terrorists. This is a relatively new

responsibility for these agencies in this country, and as a result, these personnel are learning a new body of knowledge.

The term "first responder" encompasses the initial public safety units to arrive on the scene and begin managing and mitigating any emergency incident, such as medical emergencies, violence, fires, motor vehicle crashes, technical rescue, hazardous materials incidents, and so forth. These personnel are familiar with working in particularly dangerous environments and have detailed strategies that help them manage and mitigate those incidents. However, the task of terrorism response is a new responsibility for public safety providers across the country.

Terrorism brings with it new threats and challenges to civilians and public safety agencies alike. With this new terrorism-response responsibility come many new response strategies for the public safety that first responders have to learn in order to protect the public and themselves. It is understood that public safety first responders have to be able to do their jobs while potentially being targets of terrorists themselves.

1.2 Statement of the Problem

This study addresses emergency managers' perceptions of the appropriateness and sufficiency of current available entry-level training materials for public safety personnel in the area of terrorism incident response and management. The essence of the problem investigated was the question, "Is the existing training for public safety personnel in the area of terrorism incident response adequate?"

Considering the problem of training public safety personnel to respond to terrorism incidents, Player (2000) asserts the following:

the training is critical because of the immediate threat and harm such incidents pose to responders, and because of the potential for extended reflex times and delays associated with the response of mutual aid and specialty units to such incidents. In addition, actual terrorist incidents involving weapons of mass destruction and local exercises have demonstrated that fire and rescue personnel using existing training and standard operating procedures are not prepared to recognize and respond appropriately to incidents involving weapons of mass destruction (Player, 2000, p. 9).

Player provides additional evidence that public safety responders have not responded appropriately to the tasks at hand when responding to terrorism incidents when he writes:

in Tokyo and Oklahoma City in 1995, in Centennial Olympic Park in Atlanta, Georgia in 1996, and at the Sandy Springs Professional Building in Birmingham, Alabama in 1997, emergency responders were injured and killed while responding to incidents involving weapons of mass destruction because they had not identified the threats, recognized the harms caused by the threats, taken self-protective actions, warned others, isolated the threat, or controlled the scene (Player, 2000, p. 17).

Because of their work environment, public safety first responders are likely to be put into very dangerous situations as they respond to terrorism incidents. Awareness of, knowledge of and proficiency at terrorism incident response will be critical to the competent response and mitigation of terrorism incidents by public safety personnel. Their very lives depend on it. Thus, terrorism incident response will be part of the required job tasks for all aspects of public safety; and all personnel will have to be evaluated on their preparedness for this task to secure continued employment and promotion.

As of the time of this writing, January 2008, many terrorism plots have been frustrated by law enforcement agencies in the United States; however, neither North Carolina nor Tennessee has suffered a catastrophic domestic or international terrorist act. With these facts in mind, it is important to find out whether the *Emergency Response to Terrorism: Basic Concepts* course, the primary training resource for first responders, is considered adequate as an entry-level course for public safety personnel. That issue is the focus of this study.

In an initial review of literature, little peer-reviewed research on public safety education was found. Database searches produced little more than reports on terrorism and education. One substantive resource was located through the National Emergency Training Center's Learning Resource Center website.

The majority of written material for public safety first response comes from trade journals instead of peer-reviewed journals; in addition, there were some manuscripts available from federal and state sources. The paucity of peer-reviewed research in this area was notable and indicated the need for much additional research.

1.3 Statement of Purpose

Specifically, this study attempts to evaluate the appropriateness and sufficiency of an existing course jointly developed by the National Fire Academy (NFA), the United States Department of Justice (DOJ), and the Federal Emergency Management Agency (FEMA), and entitled *Emergency Response to Terrorism: Basic Concepts* as the course is perceived by county-level emergency managers in North Carolina and Tennessee. This

federal-level course is taught by the Tennessee Emergency Management Agency and the North Carolina Department of Crime Control and Public Safety Division of Emergency Management. Each county-level emergency manager in North Carolina and Tennessee can offer this course locally at any time.

Each public safety entity (emergency medical services, fire service, and law enforcement) has its own specific role; however, they have similar approaches to dealing with day-to-day operational problems encountered, and they all are learning how to deal with new problems in the terrorism response situation.

1.3.1 Emergency Medical Services

The emergency medical services, more commonly known as EMS, are considered one of the three professions when speaking of public safety first responders. The other two public safety professions are law enforcement and the fire service. EMS is the most recent addition to the public safety professions, as it has been in existence approximately 35 years. The other two public safety professions, the fire service and law enforcement, have nearly 200 years of tradition and experience in the United States.

EMS exists in a gray area in terms of delivery modes, as many fire departments operate EMS within their operations, and many fire service personnel are cross-trained as emergency medical technicians and paramedics, the two primary prehospital practitioners. However, very few, if any, law enforcement models include EMS within their operations. EMS delivery systems may vary, but their practices, or health-care treatment modalities, remain very similar across the country. EMS may be delivered from

a stand-alone county or municipal agency, a private agency, a fire department, or a hospital. There are EMS systems in the United States that remain volunteer delivery systems, but this type of delivery system's personnel is diminishing due to the increasing danger (i.e. infectious diseases and violence) and potential legal liability associated with the profession.

In the terrorism-response situation, local EMS agencies find themselves managing both patients and responders who may become patients. Unlike in normal first-responder situations, terrorism-response EMS teams are likely not only to be some of the first on scene, but they will have to manage their patients for hours, even days, until state, federal, or even a military response arrives. This is a significant change from the historical norm, as EMS providers typically spend less than an hour at a time with average patients before patients are brought to an emergency room.

Knowing that they themselves are high-value targets early in the terrorism response situation, EMS providers must be extremely attentive to their operational situation. A 2003 study by the Rand Corporation identified specific concerns about terrorism in the EMS environment. These concerns are typically situated around the threat to the responders themselves. The study found that the top concern in this area is exposure to biological and chemical warfare agents, either via direct exposure or exposure while treating victims. EMS participants also expressed a desire for improved hazard assessment training, as well as better respiratory protection and protective clothing options to deal with these hazards (Rand, 2003, p xx).

Because EMS agencies across the United States are housed in many different delivery models (i.e. third service municipality, private, hospital-based, volunteer, fire service, etc.), it is difficult to assess the demographics of the profession. The Rand Corporation study (2003) estimated EMS provider numbers to be approximately 500,000. These numbers correspond to nearly 880,000 active EMS-related certifications, [in what sense do the numbers correspond? They seem to be quite different] but those numbers are exaggerated, as the actual active number is lower because some personnel work in emergency departments, while others operate out of dispatch centers and other areas, such as day care centers and sports venues, that are not directly involved in day-to-day emergency response operations. Additionally, many fire-service personnel are cross-trained with EMS certifications and may affect the final tally. Many people take a certification course but never become actively involved in EMS. These people may be motivated to take courses because they wish to help take care of family members, work seasonally, or take the courses for their own fulfillment.

An Institute of Medicine report (2007) entitled *EMS at the Crossroads: The Future of Emergency Care*, indicates the youth of EMS as a profession and its challenges:

EMS operates at the intersection of health care, public health, and public safety and therefore has overlapping roles and responsibilities. Often, EMS systems are not well integrated with any of these groups and therefore receive inadequate support from each of them. As a result, EMS has a foot in many doors, but no clear home (IOM, 2007, p. 37-38).

Moreover, the turnover rate for the EMS profession is quite high, and this rate may be reflected in the previously mentioned numbers. Work stresses, the threat of violence, motor vehicle collisions involving emergency response units, and dangers from infectious disease exposure, as well as liability, are all issues that the profession is attempting to resolve in order to increase retention. This task is paramount if the current system status is to be maintained, and with the new climate in the United States regarding terrorism, the retention situation is unlikely to get any better. The fire service and law enforcement professions have similar problems with recruitment and retention, but not to the levels experienced by EMS.

EMS personnel differ from their counterparts in the fire service and law enforcement in two ways. First is the difference in assumption of risk by EMS providers. EMS providers typically do not assume their safety to be in danger, whereas the fire service and law enforcement must assume inherent risk, such as interior structural firefighting or assault with deadly weapons, in their performance of duties. EMS providers do not normally involve themselves in hazardous situations (i.e. firefighting, lethal force activities) until scenes have been cleared by the fire service and law enforcement. The terrorism-response environment changes things for EMS in the assumption of risk, because of the high value of emergency management personnel to terrorists as targets because of their unique mission of providing medical care to victims. Imagine a couple of dozen EMS workers at a terrorism incident scene being decimated by a secondary terrorist event; there would not be any public safety personnel on scene to

take care of anyone. What better way for a terrorist to disrupt response operations than to target the people tasked to provide emergency medical care?

Secondly, the role of EMS providers differs from those of law enforcement and the fire service in that EMS has a fairly narrow focus. EMS providers focus primarily on patient management, whereas the fire service and law enforcement may be in charge of overall management of an emergency event (i.e. overall incident command, fire suppression, engagement of hostile subjects, mitigation of hazardous materials events, and operational security concerns). EMS is generally a part of the incident management structure, but it is typically never in charge of the overall operation.

1.3.2 Fire Service

The fire service in the United States has a long and storied tradition and a wide experience base. Fire departments in the United States can be freestanding, providing fire-related responses only, or they can provide both fire-related services and EMS. In addition, personnel may be either paid career professionals or volunteers. It is interesting to note that the majority of the United States is covered by volunteer fire departments. [it might be interesting to give this as a percentage of counties] Similarly, the profession of EMS has a strong volunteer component as well.

The fire service utilizes a system of emergency management for its operations; it is termed the Incident Management System and is commonly known as IMS. Formerly, it was known as the Incident Command System, or ICS, but this term is not often used today. The fire service is generally the lead agency in managing/mitigating a terrorism

incident in regard to overall scene management, delegation of patient care, and communications. Emergency management coordinators generally augment the IMS with an Emergency Operations Center (EOC), so that all public safety agencies have a centralized area from which to run their response operations. The EOC is a command post that acts as the nerve center for coordinating and mitigating a major emergency event. The EOC is the domain of the emergency manager.

The fire service's reputation in the United States reflects its long service to the country's communities, especially after the terrorism events in Oklahoma City, the 2000 Atlanta Olympics, and 11 September 2001 in New York City and Washington, D.C. The fire services respond to situations ranging from home electrical problems and water/flooding problems to family pets caught in trees. The fire service encourages this relationship with its constituents, as does law enforcement. However, EMS typically does not have the community relationships that the fire service and law enforcement have worked to develop.

In a terrorism incident, it is initially the fire service that will have to perform fire suppression and rescue operations; in addition, the fire service is the major operations manager at a terrorism incident, its responsibilities being overall management, rescue, fire suppression, rehabilitation, and safety operations. The fire service's lead in overall operations is the norm across the country, unless the incident is purely law enforcement and/or medical in its scope, which is rare. State statutes normally establish this authority for the fire service.

Estimating fire service personnel numbers in the United States, the Rand Corporation found that in the year 2000, the United States had approximately 1,100,000 firefighters working in more than 26,000 fire departments. About one-quarter of these firefighters were career/paid personnel and three quarters were active volunteers. Despite the fact that volunteers far outnumber career firefighters, the latter serve 62% of the country's population. While fire departments in the largest cities employ thousands of firefighters, most other departments are much smaller: More than 80% of departments protect populations of less than 10,000 and have an average size of fewer than 50 firefighters (Rand, 2003, p. 12).

As noted in the Rand study (2003), most fire services in the United States use volunteers to deliver services. This surprises many people in urban and suburban areas, as citizens in those communities are used to full-time career paid firefighters. The differences in the competencies, efficiency, and response levels of the two groups can be markedly different.

Year after year, the fire service ranks near the top of the list of "most dangerous professions." There is inherent risk in events such as interior structural firefighting, extrication of persons from motor vehicle collisions, confined space rescues, high-angle rescues, and the like. Despite these inherent risks, the fire service takes great care to avoid risk where possible by using strict operating guidelines and procedures, issuing safety equipment such as thermal turn-out gear and helmets, and relying on technology and communications such as thermal imaging and state-of-the-art radios.

1.3.3 Law Enforcement

Law enforcement, like the fire service, works similarly in inherently dangerous environments and has a long and hallowed tradition and experience base. Law enforcement operations deal strictly with law enforcement; they typically do not provide fire or EMS service interface, except in rare situations where public safety officers are trained in both law enforcement and firefighting. This situation is not very common in the United States. A public safety officer must complete a great deal of training--1000 to 1500 clock hours--in order to fulfill the demands of both the job description of firefighter and police officer.

The Rand Corporation reports that there “were nearly 800,000 full-time, sworn law enforcement officers in the nation in 2000” (Rand, 2003, p 14), with more than half of those officers being in local law enforcement agencies (i.e. city, township, or county), and the remainder in state or federal agencies. The Rand report estimated that approximately 73% of those officers (about 580,000) could be counted upon to respond to terrorist incidents (Rand, 2003, p. 14).

The primary tasks of law enforcement at the scene of a terrorism incident are overall security, collection/preservation of evidence, collection of intelligence information, and apprehension of suspects, if possible. In fact, law enforcement may have the toughest task of all in its efforts to prevent terrorism by means of enforcement prevention, overall methodology, intelligence gathering, database creation and management, increased staffing, and the like. [you might want to arrange these efforts in some order--macro to micro or something like that]

Like the fire service, law enforcement differs from EMS in its assumption of risk. The profession attempts to limit risk by having strict operating guidelines, issuing safety equipment such as ballistic vests, and relying on technology and communications such as forward-looking infrared vision detecting equipment (used for night operations) and state-of-the-art radios.

1.3.4 Terrorism Challenges for All Public Safety Professions

The advent of nuclear, biological, and chemical attacks, which, until recently, had not been encountered in the United States, has brought new challenges for all branches of public safety professions. In the past, domestic and international terrorists traditionally used explosive/incendiary devices against civilian targets as their choice of destructive weapons; however, weapons options have expanded, and so have the dangers for first responders.

As noted previously, public safety personnel now have to deal with being specific terrorist targets themselves, something they have never had to deal with before in the United States. Collectively, the first responders in the United States have already learned much from the United Kingdom's and Israel's first responders and military. Israel, for example, has been dealing with this particular problem with extremist groups (e.g. Hamas) for years.

Hamas (also known as the Islamic Resistance Movement) is a militant Islamic radical fundamentalist organization whose members believe that the state of Israel should not exist and have embraced terrorist methods in order to further their cause (White,

1998). A signature tactic for Hamas is to set off an explosive device in a heavily populated civilian area, wait for the fire service, police, and EMS response, and then to set off a secondary device to kill, injure, and disrupt the rescue operations. It is expected that this terrorist tactic will be employed here in the United States as well.

In the United States, we have already had two terrorist incidents that targeted public safety first responders, one in Atlanta, Georgia (1997) and another in Birmingham, Alabama (1998). The Birmingham bombing killed a law enforcement officer (Burke, 2000). [explain how the Atlanta bombing targeted first responders as well] Prior to these incidents, public safety providers in the United States had never before had to deal with being targets of terrorists. This specific challenge has to be overcome by the public safety providers through training in new operations-related curriculum.

In the context of emergency management, terrorism falls under the heading of "man-made disaster." In the event of a significant terrorism incident, the public needs to realize that all disaster situations begin and end locally. This is a premise of emergency management that rings true in every disaster event, especially terrorism. First responders are a local resource and typically not a state or federal resource, but they are the ones best positioned to respond promptly, while state and federal agencies involved in mutual aid may take hours and/or days to respond and be effective; in addition, state and federal agencies typically play a subordinate role to the local agencies, which use those resources as needed. However, in the case of a major incident, local agencies may be overwhelmed. State and/or federal resources may take a greater role in operational

command in that situation when notified by the appropriate personnel. The standard operations guidelines for this type of assistance are well established.

1.3.5 Modern Terrorism in the United States.

The first significant terrorism incident on American soil occurred in February 1993, when international terrorists attempted to bring down the World Trade Center towers the first time; powerful car and truck bombs killed six people and injured many more. This event was followed by the first modern catastrophic American loss of life inflicted by domestic terrorists at the Alfred P. Murrah Federal Building in Oklahoma City in April 1995. This event killed 168 people, including children and infants, via a truck bomb laden with ammonium-nitrate fuel oil explosive.

Oklahoma City was followed by terrorism incidents in Atlanta that occurred in 1996 and 1997 when medical clinics and bars were subjected to pipe bombs. The Olympics in 2000 did not escape terror. A pipe bomb was placed in the Olympic Centennial Park common venue near downtown Atlanta. This pipe bomb killed two persons and injured over 100 others. To the credit of the fire service personnel of the City of Atlanta Fire Department, local EMS providers, and the Olympic emergency management personnel, the entire bombing scene was cleared of the 100-plus patients and victims taken to area hospitals for definitive treatment within 80 to 90 minutes of the incident. Extensive planning and subsequent training efforts prior to the event had prepared the public safety services for this terrorist contingency, and the efforts paid off.

The most recent terrorism catastrophe and most costly American loss of life occurred September 11, 2001 at the World Trade Center Towers in New York City and the Pentagon in Washington, D.C. This terrorist event thrust the public safety first responders fully into their newly assigned role--major terrorism response--for only the second time. Over 3,000 civilians and public safety workers were killed when two fuel-laden passenger aircraft piloted by Middle Eastern terrorists crashed into the twin towers. This terrorist event affected countless lives all around the globe physically, emotionally, and economically. More than six years later, the event weighs heavily on the minds of American citizens, and first responder personnel continue training in earnest for another situation such as this one.

The emergency medical services, fire service, and law enforcement personnel across the country, not just the Fire Department of New York, are still mourning the massive loss of firefighters and other first responders on 11 September; 343 New York City firefighters, 23 New York City Police Department officers, 37 Port Authority Police Department officers and eight New York City Emergency Medical Services personnel died while attempting to save thousands of people in the World Trade Center towers. Within minutes of the World Trade Center attack, first responders across the nation realized that they were neither effectively trained nor ready for their new responsibilities. The importance of terrorism incident management education was made evident to every public safety agency in the country. Oklahoma City had prompted many public safety personnel to consider the possibility of terrorism events, but the events of 11 September

2001 brought those possibilities home to all. Public safety personnel must now consider themselves targets in any future terrorism event.

When considering the myriad of different weapons that terrorists could employ on a population, explosive devices are by far the most widely used means of terrorism.

Arnold (2004) found the following:

from 1991 to 2000, 93 reported terrorist attacks resulted in more than 30 casualties, and 88 percent of those attacks involved explosions. Over the past 25 years, explosions or firearms have been used to commit countless acts of terrorism in Israel, Egypt, Kenya, Argentina, Columbia, Bali, Yemen, Russia, the United Kingdom, Germany, France, Italy, [and] the United States (p. 180).

1.3.6 First Responder Training

Terrorism incidents are extremely difficult scenarios for which to train public safety first responders. The primary difficulty comes from the many types of terrorism incidents that can occur. Secondary considerations are cost of the training as well as coordination of resources for the training.

DeLorenzo (2000) indicates that “by choice, terrorists frequently employ Weapons of Mass Destruction (WMD)” (p. 2). He further states:

the biggest concern when responding to a terrorist attack is to assure the safety of the response team and the public. All WMD attacks have the potential for contaminating large areas. Proper protective equipment and devices are needed to safely operate in contaminated areas. A further risk is additional or secondary devices designed to injure or kill the rescuers. Proper training and strict adherence to safety procedures will minimize the risk to responders. An effective public evacuation plan will mitigate the risk to the public (p. 6).

The potential terrorist, domestic or international, may appear in various guises and may utilize any of a number of weapons or deadly chemical/biological methods. The terrorist

may be a disturbed teenager at a schoolyard with a rifle, a mob of armed militia zealots at a racist rally, a group of environmental extremists at a harbor or port facility, or a single religious extremist at an airport. The type of incident, the nature of the threat, and the delivery method are left to the imagination of the terrorist. This is a huge disadvantage for the public safety provider, as most terrorism response operations must be reactive rather than proactive.

Only three major metropolitan centers--New York, Washington, and Oklahoma City--have had experience with major terrorist events. The inherent problem, and it is a very difficult one, is training public safety agencies for all of the possible terrorist methods. Each type of terrorist event (i.e. ballistics, explosives, chemical, biological, nuclear, etc.) is a training evolution in itself. Many public safety agencies do not have the time or resources to train for each contingency.

As suggested by Hawley, Noll, and Hildebrand (2002) trends in terrorism are as follows:

- 1) The suicide bomber is the wave of the future.
- 2) The threat of radiological dispersion devices (RDDs) will develop and may become the next big hoax.
- 3) The lack of threat intelligence does not equal a lack of a threat. The al Qaeda terrorists used excellent operations security (OPSEC) to maintain operational secrecy. The lack of clear intelligence that there is a threat to a specific location or target does not mean that we do not need to plan and train for an event.
- 4) The use of industrial chemicals will be exploited as a weapon, and future events will likely involve dangerous materials used in manufacturing processes and found in storage and transit.
- 5) Terrorists will target large buildings that have lots of glass and a minimum standoff distance of less than 100 feet. The falling glass will be used as a secondary weapon to injure spectators.
- 6) Loosely affiliated domestic and foreign terrorist groups will pose a real and significant threat to our security. There will be fewer claims of responsibility. The trend

will shift from advertising a cause to bringing on fear and anarchy within the United States.

7) Tactics will increasingly involve civilians as targets (p. 16-17).

Buck (2002) outlined the various types of terrorist organizations operating in the United States that can employ various types of weapons and threats to the populace. They include ethnic separatists and émigré groups; left-wing radical organizations; right-wing racist and anti-government groups (i.e. militia groups); foreign terrorist organizations; and issue-oriented groups that use violent forms of protest (p. 298).

The problem for the safety professions is that adequate training has to be developed for nuclear, chemical, explosive, and biological situations. Again, there are thousands of scenarios that could take place. No public safety agency, no matter its complexity or resources, can plan for every event. Satisfactory response requires a highly trained group of first response personnel who can assess and quickly adjust to a dynamic environment that, further, may involve dangers specifically to the people meant to helping others.

Flynn (2004) indicates the scope of the difficulties public safety personnel face when taking into account training for such events:

Then one must consider training. Major field exercises are important tools to test the adequacy of contingency plans, equipment, command and control procedures, and training. In all but America's largest cities, there is a paucity of resources and expertise to conduct these large-scale exercises. Important specialized training is also in woefully short supply. For example, the Center for Domestic Preparedness in Anniston, Alabama is the only facility in the nation in which first responders can train with and gain firsthand knowledge of chemical agents. At peak capacity, it can train only 10,000 first responders per year (p. 128-129).

Falkenrath (1998), pointing toward additional problems that first response personnel may face in real terrorism response situations, writes:

The government personnel needed to conduct an effective operational response to a real nuclear, biological, chemical (NBC) threat may themselves be injured, panic, flee, or refuse to carry out their responsibilities as required, compounding the effects of any attack. Active-duty military personnel will generally have the training and discipline needed to conduct operations in an extremely hazardous environment. But without appropriate equipment and training, emergency response personnel such as police, firefighters, and paramedics may well end up among the first casualties of an NBC incident (p. 6).

Auf der Heide (2006) also emphasizes the importance of training for major incidents. He notes that soon after a disaster (for the purposes of this, a terrorist incident), the chaotic environment creates a great deal of workload for the emergency manager. It has been found that emergency response units from neighboring/mutual aid areas will self-dispatch or go out independently to help, and patients will overload the local health care systems. The emergency manager's job will be to organize what is inherently disorganized: not an easy task.

Chan (2000) notes the situation that public safety first responders face:

[D]isasters are characterized by many people trying to do quickly what they do not ordinarily do, in an environment with which they are not familiar" (p. 200). He further states that "regardless of disaster plans, efforts will be ineffective if personnel are not well-trained in executing them. Currently, this lack of training is a serious deficiency of the national disaster preparedness effort" (p. 200).

At this time, there exists only one standardized entry-level terrorism incident response course of instruction for all first responder providers in the United States. Created by several different agencies of the federal government (the National Fire Academy, the United States Department of Justice, and the Federal Emergency

Management Agency), the course is entitled *Emergency Response to Terrorism: Basic Concepts* (1997). This federal level course may be taught in a traditional lecture-classroom setting (16 hours) or in an internet/computer based format (10 hours).

The emergency management regulatory agencies for the states of North Carolina and Tennessee (North Carolina Department of Crime Control and Public Safety – Division of Emergency Management and the Tennessee Emergency Management Agency) have adopted this course as a recommended entry-level course to train firefighters and other public safety workers because neither North Carolina nor Tennessee has created a state-level, entry-level terrorism response course similar to *ERT: BC*. Additionally, neither state has created a computer-based, entry-level terrorism response course.

The traditional lecture/classroom course is 16 hours in length and is typically taught over a period of two days. The typical two-day course organization is found in Appendix A. The curriculum for *Emergency Response to Terrorism: Basic Concepts* incorporates the following material:

1. Understanding and Recognizing Terrorism. This chapter defines terrorism and gives examples of terrorist events in the United States by geographic regions. A history of domestic and international terrorism is given, as well as a brief description of the challenges to emergency responders as a result of terrorism. The importance of this chapter is the final part, recognition of terrorism events, as many events may not be recognized as terrorism until well after the event is put into motion; for example, a biological terrorism situation. It would take a little over a week in most situations to

identify this type of event; whereas, nuclear, chemical, and explosive/ballistics events would be quickly identified.

2. Implementing Self-Protective Procedures. This chapter gives guidance to the emergency responder in how to protect him- or herself in a terrorist incident. This self-protection module covers aspects of nuclear, biological, and chemical incidents as well as armed attacks and explosions. Examples are given for actual situations where emergency responders have been targeted in the United States.

3. Scene Control. This chapter gives guidance to the emergency responder in order to control terrorism scenes. This includes establishing a perimeter around the event and denying access to persons in order to mitigate/manage the incident. Public protection from the incident, including exigent evacuation measures, is also discussed.

4. Tactical Considerations. This chapter teaches the emergency responder to recognize terrorism incidents and gives examples of possible situations, such as the presence of biological, nuclear, incendiary, chemical, and explosive materials. This instructional section stimulates public safety first responders to imagine how many different scenarios may be played out. This is very important, as the sheer number of possibilities of terrorist tactics can be overwhelming for public safety agencies.

5. Incident Management Overview. This chapter discusses command-and-control issues associated with terrorism incidents. It involves the overall incident management system that public safety agencies have adopted for all significant events, including terrorism.

The *Emergency Response to Terrorism: Basic Concepts* computer-based course is found on the National Fire Academy's interactive web site. A student can complete it in approximately 10 hours, and the course content is essentially the same as the traditional lecture/classroom course.

In the State of Tennessee, this course is mandated for the fire service in order for firefighters to fulfill their training requirements for hazardous materials operations and advancement within the emergency management professional development ranks. This is important because the fire service has specific responsibility in managing hazardous materials response. Additionally, those firefighters in officer or training positions have to complete this course in order to fulfill specialized "career ladder" requirements for promotion to company officer or chief officer. This is not the case for EMS providers, nor is there any incentive for public safety personnel in the State of North Carolina to take this course as their counterparts must in the State of Tennessee.

1.4 *Design of the Study*

1.4.1 Research Questions

There were five specific research questions foundational to this study:

- 1) *How do North Carolina and Tennessee emergency managers perceive the current Department of Justice/Federal Emergency Management Agency's Emergency Response to Terrorism: Basic Concepts curriculum for public safety providers in the discipline of terrorism incident response?*

This question was answered through survey items that deal with appropriateness of curriculum content and importance of topic. Demographic information (that is,

population sizes, assumption of risk of terrorism event) enabled analysis of responses at a more thorough level.

- 2) *How are North Carolina and Tennessee emergency managers using the current curriculum?*

Survey items pertaining to this research question provided information about the application of the curriculum (that is, do they use it?) and how it is being used. Again, demographic information supplied by respondents enabled more detailed analysis of response patterns.

- 3) *Do North Carolina and Tennessee emergency managers believe that the current curriculum should be modified for public safety personnel for use in these two states, and if so, how?*

This question was also answered through survey questions, some open-ended. Special attention was also given to the perceived importance of the text content and delivery format (printed text and lecture versus the FEMA computer-based on-line programs).

- 4) *Based on the responses of North Carolina and Tennessee emergency managers and previous research, how should the current curriculum be modified?*

This question was answered through respondent recommendations and findings from other research. The open-ended questions to survey respondents were qualitative in nature and were analyzed via content analysis.

- 5) *To what extent are the curriculum and curriculum delivery methods currently in use in terrorism event response by public safety first responders consistent with the research on adult learning and learners?*

This question was answered by comparison of the content and the delivery methods for the curriculum with principles of adult learning and learners and research in that field.

1.4.2 Study Population

The subjects of this study were the 194 county emergency managers in the states of North Carolina and Tennessee. The county populations ranged from 4,149 (Tyrrell County, North Carolina) to 897,472 (Shelby County, Tennessee). There are 195 counties total in these two states, and this information is presented in Appendix B. The county populations for North Carolina are presented in Appendix C and it is noted that there is one emergency manager for the two counties of Camden and Pasquotank for this state. The county populations for Tennessee are presented in Appendix D.

The survey population fit the top two United States Census definitions of “urban cluster” (2,500 to 49,999) and “urbanized complex” (50,000+). This population included all counties in North Carolina and Tennessee. It should be noted that the 194 potential respondents in this study have responsibility for approximately 13.7 million persons as documented by the 2000 United States Census.

For each of the 195 North Carolina and Tennessee counties, with one exception mentioned earlier (for a survey population $n=194$), there exists one major emergency management agency that coordinates the efforts of emergency medical services, the fire service, and law enforcement in a major disaster event.

The senior emergency manager in each county-level emergency management agency was surveyed as to her/his experience with, and opinion of, the curriculum.

Because some of the emergency management agencies had exceptionally large staffs, it was in the best interest of the study to survey the supervising/senior emergency manager of the county, as these individuals typically have the greatest amount of training and experience and are most likely to conduct and/or coordinate training for those under their supervision. County-level emergency managers were chosen for this survey population, as they are the coordinating body for public safety first response (EMS, fire, and law enforcement) to a terrorism incident.

1.4.3 Methodology

The survey instrument used in the study was developed by the researcher. The survey instrumentation is found in Appendix E. The survey addressed specific areas and aspects of the curriculum of the FEMA course and contained other relevant research questions.

Questions for the county emergency managers focused on two areas. First, are public safety personnel being trained on the right things? Second, are public safety personnel being trained adequately?

The cover letter/informed consent is found in Appendix F. Each cover letter and survey instrument were placed in an oversized envelope and mailed out after each had been revised and approved by the dissertation committee and the University of Tennessee, Knoxville Institutional Review Board. The investigator secured a mailout database from each state's Division of Emergency Management. The databases ensured that mailing and respondent information were up-to-date. However, several of the addresses provided by each state's Division of Emergency Management were not up-to-

date and additional methods were utilized to seek current contact information (e.g. the Internet).

A United States Postal Service post office box was the collection point for the completed surveys. After the initial mailout to the 194 respondents, a follow-up postcard was sent two weeks later to remind the respondents to complete the survey. A second mailout was completed after initial receipt of completed surveys in order to increase return rate. Telephone interviews were made to further increase return to greater than 50 percent in order to generalize data. The telephone interview administration is explained in Chapter 3.

Data analysis included computation of descriptive statistics (frequencies and percentages) to analyze respondents' answers on the survey's Likert-type scales. This procedure was used extensively in identifying quantifiable information such as respondents' perceptions of course appropriateness and importance of course content.

1.4.4 Assumptions

Six assumptions were inherent in this study: First, that the county-level emergency managers in North Carolina and Tennessee are aware of terrorism and its impact on the provision of public safety operations and the training of public safety providers. Second, that larger municipalities (populations) take terrorism more seriously than smaller municipalities; which may not be the case as some critical/sensitive landmarks targeted by terrorists are in sparsely populated areas.

The third assumption was that county-level emergency managers in North Carolina and Tennessee were aware of their county's population demographic and the relative risk of a terrorism event in their locale. The fourth was that emergency managers in North Carolina and Tennessee also knew enough about their areas' public safety agencies to answer questions specific to that profession and its interface with the emergency management agency. The fifth was that emergency managers in North Carolina and Tennessee understood how to complete the survey instrument and its purpose. Finally, the sixth assumption was that the survey instrument and procedure developed for use in the study were adequate to elicit the desired information.

1.4.5 Limitations

The study had some limitations. Chief among them is that North Carolina and Tennessee were the only states included in the study, so the data received do not represent the entire country. In addition, North Carolina and Tennessee do not have the same high threat probabilities as some other states. Similarly, no comparisons of findings of this study with conditions or perceptions in any other states can be made. Further, this study was limited to public safety personnel and their operations during man-made disaster events (terrorism).

Another limitation was that the information collected was limited to perceptions of county-level emergency managers or their designees in Tennessee and North Carolina. It is noted that the education, experience, and competency of this population were varied and may have affected the results of the study.

Additionally, emergency managers or their designees represent leadership positions, and thus, opinions were not solicited from the rank-and-file public safety personnel from the counties of each of the two states.

Finally, it is not known whether the respondents generally consider the threat level (probability) for a terrorism event to be a major concern.

1.4.6 Delimitations/Definitions of Terms

The study focused only on the topics covered in the Federal Emergency Management Agency's *Emergency Response to Terrorism: Basic Concepts*. There are many terms in government and public safety that are confusing. The following is a list of acronyms found in this study that many people may not be familiar with.

ACEP	American College of Emergency Physicians
AHRQ	Agency for Healthcare Research and Quality
BWC	Biological Warfare Convention
CAI	Computer-Based Instruction
CBL	Case-Based Lecture
CBRNE	Chemical, Biological, Radiological, Nuclear, Explosive
CDAC	Curriculum Development Advisory Committee
CDC	Centers for Disease Control and Prevention
CE	Course Evaluation
CME	Continuing Medical Education
CRME	Center for Research in Medical Education

DHS	Department of Homeland
DHHS	Department of Health and Human Services
DOJ	Department of Justice
ED	Emergency Department
EGE	Educational Gaming Exercise
EM	Emergency Management
EMA	Emergency Management Agency
EMF	Emergency Medicine Foundation
EMI	Emergency Management Institute
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EMTP	Emergency Medical Technician - Paramedic
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ER	Emergency Room
ERT: BC	<i>Emergency Response to Terrorism: Basic Concepts</i>
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
GWOT	Global War on Terror
HIPAA	Health Insurance Portability and Accountability Act
HMTO	Hazardous Materials Technician Operations
HRSA	Health Resources and Services Administration

HSIC	Homeland Security Information Clearinghouse
HSPD	Homeland Security Presidential Directive
ICS	Incident Command System (also known as IMS)
IED	Improvised Explosive Device
IMS	Incident Management System
IOM	Institute of Medicine
JTTF	Joint Terrorism Task Force
MCE	Multiple Choice Examination
NAS	National Academy of Sciences
NBC	Nuclear, Biological, and Chemical
NETC	National Emergency Training Center
NFA	National Fire Academy
NHTSA	National Highway Traffic Safety Administration
NIH	National Institutes of Health
NIMS	National Incident Management System
ODP	Office for Domestic Preparedness
OPSEC	Operational Security
OSCE	Objective Structured Clinical Evaluation
OSLGC	Office of State and Local Government Coordination
PPE	Personal Protective Equipment
PSA	Public Service Announcement
RDD	Radiological Dispersion Device

RNA	Ribonucleic Acid
SAEM	Society for Academic Emergency Medicine
SE	Skills Exercise
SOG	Standard Operating Guideline(s)
SOP	Standard Operating Procedures
SPSS	Statistical Package for the Social Sciences
SRF	Self-Rating Form
SWAT	Special Weapons and Tactics
TA	Threat Assessment
TEWG	Terrorism Early Warning Group
TTE	Tabletop Exercise
USFA	United States Fire Administration
VBE	Video-Based Exercise

1.4.6 Conclusions

This chapter presented the current state of public safety and terrorism incident response in the United States and the purpose of the study was presented. Chapter Two will present the literature review. Chapter Three will present the research method for the study. Chapter Four will present findings of the respondents' data. Chapter Five will provide conclusions, discussion and recommendations.

CHAPTER TWO

REVIEW OF THE LITERATURE

2.1 *Introduction*

In this chapter, review of pertinent literature was aggregated into five specific areas: fire service response to terrorism, law enforcement response to terrorism, emergency medical services response to terrorism, multi-disciplinary medicine and public health approaches to terrorism response, and the field of adult education. The adult education portion deals with characteristics of adult learners in the areas of motivation, computer-assisted learning and experiential learning. It is noted in some circumstances in the literature review that research in this area is sparse.

The paucity of research is noted; there were few research articles written concerning terrorism response education for public safety agencies at the time of this study. One article was fire service-related and evaluated different types of terrorism training available. The other articles addressed multidisciplinary approaches to terrorism training and incident response in the field of medicine.

2.1.1 United States Fire Service Response to Terrorism

Overall, one can see the impact that the threat of terrorism had on the United States, even over a decade ago. Moore (2005) noted that in 1996, the Defense Against Weapons of Mass Destruction Act brought billions of dollars into preparedness programs across the

country. Since that time, countless readiness exercises and training have occurred from this Federal government endeavor.

However, there exists no assessment to validate the effectiveness of that preparedness training. Moore (2005) does mention that there may be some help coming with regard to this assessment and training dilemma via the Homeland Security Grant Enhancement Act of 2005. This effort would provide an information clearinghouse termed the Homeland Security Information Clearinghouse (HSIC). The HSIC will be under the auspices of the Office of State and Local Government Coordination (OSLGC). One of the central purposes of the OSLGC would be to collect and distribute information about best practices for preparedness training programs geared for terrorism. At this time, it is not known if this expressly affects the existing course, *Emergency Response to Terrorism: Basic Concepts*.

With regard to best practices and training programs, fire service agencies have noted the lack of training assessment and are attempting to find a way to provide a best practices approach. Moore continues,

the logical next step might be, therefore, to assign the development of standardized accredited first-responder training programs to the same agency. These programs could use one of three processes to develop the standards needed: the de facto process, a voluntary consensus process or a regulatory process, which would require approval and monitoring by OSLGC/HSIC (Moore, 2005).

Just after the terrorism events of 11 September, 2001, Chief Edward P. Plaughter of the Arlington County, Virginia Fire Department testified to the United States Senate Committee on Commerce, Science, and Technology. Chief Plaughter spoke to several

issues facing the fire service and terrorism response. He specifically addressed terrorism response training. His testimony included the following:

the issues of training and equipping the fire service to cope with incidents of terrorism are paramount. Management training provided by the National Fire Academy is excellent. However, in decades past, the fire service was given responsibility first for emergency medical services and then hazardous materials response. We found that training that was locally available was the most effective. Programs that provide operational and technical training in terrorism response ought to be provided locally to the extent possible. This means enhancing the locally-based training system to provide the sorts of training those firefighters will need in future incidents (Plaughter, 2001, p.3).

He added,

I also believe that if we are to have a properly trained and prepared fire service, we ought to have some assistance at the company officer level with respect to terrorism training. I have struggled with the need to send my officers away, often for weeks at a time, so that they may take part in terrorism response training sessions. It is burdensome and expensive for most local communities. Any staffing initiative undertaken by the federal government should provide for the absence of officers in training and the need for 'back-filling' in their absence (Plaughter, 2001, p. 4).

In a related study by Player (2002) at the National Fire Academy's Executive Fire Officer Program, three terrorism response awareness programs were evaluated as to their efficacy in training an Eastern Virginia Regional Fire Service system. The author utilized an Instructional Systems Design process in order to select one of three terrorism response awareness courses. These courses included *Public Safety Response to Terrorism*, created by the Commonwealth of Virginia Department of Emergency Management in 1999; *Domestic Preparedness – Defense Against Weapons of Mass Destruction*, created by the United States Department of Defense in 1998; and *Emergency Response to Terrorism: Basic Concepts*, created by the United States Fire Administration in 1999.

Player (2000) explained the Instructional Systems Design' three-phase process. The first phase is the assessment phase; this includes a definition of a performance problem, needs analyses, and prioritization of training needs. The second phase is the design and implementation phase; this includes training objectives, decision-making, learning theory, as well as training methods, schedule and trainee preparation. The third phase involves evaluation, essentially the research design and evaluation model (Player, 2000, p. 9).

Player's study involved a population demographic of 56,000 persons whose model of service provision was a county-level municipal fire department. One of his assumptions was that the "novelty of the topic, combined with the lethality and threat to the responders" (p. 14) should provide sufficient motivation and foundation for personnel to support terrorism response training. He identified four specific tasks required of fire-rescue personnel in responding to a terrorism event involving weapons of mass destruction. These tasks are 1) threat recognition, 2) warning civilians and other public safety assets of the threat; 3) threat isolation; and 4) establishing scene control (Player, 2000, p. 16).

Player's study reported that the best course was the one developed by the State of Virginia. The course created by the Department of Defense contained too little material to be beneficial, and the fire service course, *Emergency Response to Terrorism: Basic Concepts* contained too much material. It is noted that there exist very few studies in the area of fire service response to terrorism, especially with respect to training and evaluation of such events.

2.1.2 United States Law Enforcement Response to Terrorism

In a study by the Rand Corporation (2004), relationships between perceptions of risk, funding and preparedness in law enforcement agencies across the United States were examined. The report found that

law enforcement agencies that perceived the risk of a future terrorist attack to be higher for their jurisdiction were more likely than other agencies to have (1) updated their response plans or SOPs and mutual aid agreements to address terrorism-related incidents, (2) conducted or participated in joint training exercises with terrorism-related task forces, and (3) internally reallocated departmental resources to focus on improving response capabilities and preparedness for terrorism-related incidents following 9/11' (Rand, 2004, p. xxv-xxiv).

The Rand study (2004) noted that those same agencies “assigned a higher priority to investing departmental resources on terrorism preparedness and to be proactive in conducting assessments even before 9/11” (p. xxv). The investment of law enforcement departmental resources for terrorism preparedness included training. The study also found that the size of the jurisdiction for the particular law enforcement agency predicted whether or not they improved their preparedness level. The larger the size of the jurisdiction, the more improved was their preparedness level. When considering funding for preparedness initiatives, instead of size of jurisdiction being the main variable to receive external funding, the most important variable was found to be threat component of risk. This finding was more likely to have been related to agencies being more proactive because of their own interpretation of risk to their community. Specifically, the study found that law enforcement agencies:

in large counties tended to be more proactive in addressing terrorism preparedness than were agencies in small counties. Law enforcement agencies in large counties were also more likely to assess the threat of

future terrorist attacks to be relatively high for their jurisdiction and to assign a high priority to investing departmental resources on preparedness' (Rand, 2004, p. xxvi).

Law enforcement agencies differ when considering rural versus urban operations.

Further, the Rand Study, when considering rural versus urbanized areas for law enforcement agencies, found that

homeland security experts and first responders have cautioned against an overemphasis on improving the preparedness of large cities to the exclusion of smaller communities or rural areas, noting that much of our critical infrastructure and some potential high-value targets (nuclear power plants, military installations, agricultural facilities, etc.) are located in less populated areas. Importantly, we found that perception of risk was not correlated with size of jurisdiction. That is, even law enforcement agencies in smaller counties, if they assessed the risk to be higher for their jurisdiction, were proactive in improving their level of preparedness. The fact that both perceived size and risk of jurisdiction were predictive of undertaking preparedness activities but were not strongly correlated with one another suggests that law enforcement agencies are taking both factors into account' (Rand, 2004, p. xxvi).

When considering law enforcement agencies and their experience with terrorism groups, the Rand Corporation (2004) found that while most state law enforcement agencies were aware of potential terrorist groups in their state, only 20% of local law enforcement agencies were aware of the same thing (p. 13).

Before the terrorist attacks of 11 September 2001, very few, if any, local law enforcements agencies had any experience in terrorism incident response. In the Rand (2004) study, 88% of local law enforcement agencies reported that no incident had occurred in their jurisdiction since 1999. Ten percent of those local agencies reported between one and five incidents in which they had to be involved. Even then, it was a

supportive role only, reporting to and essentially working for state and federal law enforcement agencies (p. 14).

Since the terrorist attacks of 11 September 2001, both state and local law enforcement agencies have built experience with responding to terrorism incidents, both real events and false alarms. Surprisingly enough, approximately one-half of law enforcements agencies reported being involved in actual or false-alarm terrorist incident responses. Rand (2004) reports that most all of the false-alarm incidents “were related to chemical, biological, or radiological (CBR) attacks” (p. 15). Of these responses, the most common were anthrax-related incidents. Large county law enforcement agencies were twice as likely as smaller law enforcement agencies to respond to these incidents. Anthrax-related incidents presented new challenges for law enforcement agencies across the country. Around the United States, images of “suspicious white powder” saturated the news channels for months. This was the most frequent type of response for local law enforcement agencies, in both large and small counties (p. 15).

A threat assessment is an important process for any public safety agency to complete with respect to terrorism preparedness and related training. Rand (2004) describes a threat assessment as the following:

a threat assessment is a process by which one can evaluate the likelihood of terrorist activity against a certain asset or location. Such an assessment can be used as a decision support tool to determine what types of threats to prepare for and how to allocate public safety and emergency response resources’ (Rand, 2004, p. 21).

It was noted that the Rand study evaluated perceptions of terrorism threat for a particular jurisdiction. The perceptions of the law enforcement agencies were important in the

Rand study, as some direction was given as to what the particular agencies should be preparing and training for. The Rand study asked the survey respondents to

rate the likelihood to different types of major terrorist incidents occurring within their jurisdiction or region within the next five years. The types of incidents asked about were CBR, cyberterrorism, conventional-explosives incidents, agroterrorism, and incidents involving the use of military-grade weapons' (Rand, 2004, p. 21).

Approximately 50% of law enforcement agencies thought it was unlikely that a terrorism event would occur in their jurisdiction. Approximately 20% of local agencies perceived the chance of a terrorism event to be "somewhat likely or very likely" (Rand, 2004, p. 21). Incidents involving explosives, cyberterrorism, biological and/or chemical agents were the ones that law enforcement agencies perceived to be the likely situations for which to prepare.

Additionally, Rand (2004) found that law enforcement agencies from large counties perceived the threat of terrorism to be higher for their jurisdictions than for smaller counties, except for the perceived incidence for agroterrorism. In that specific instance, both groups rated this type of incidence similarly (p. 21). Rand (2004) indicated that local law enforcement agencies gave varied responses when asked about training for terrorism incidents, especially as to who might be offering such training. Only 5% of local law enforcement agencies reported that their own police academies offered such training. When examining small county versus large county responses, only 3% of small county police academies taught terrorism response training, whereas 17% of large police academies in large counties offered the training. The most surprising finding

was that approximately 33% of local law enforcement agencies did not know whether their own police academy offered this type of training (Rand, 2004, p. 49).

Local law enforcement agencies were also asked whether or not they received any terrorism training from any other source than their own police academy; e.g., state-led training. Surprisingly, only 21% of local law enforcement agencies were aware of state interventions or the lack thereof. Awareness in smaller counties was even more limited (12%). With respect to specialized law enforcement units (such as SWAT teams and specific counter-terrorism teams), the local law enforcement agencies indicated that 16% had specific training related to terrorism.

Lastly, the Rand study (2004) found that some local law enforcement agencies at the local level also participate in federally-sponsored counterterrorism training such as the *Emergency Response to Terrorism: Basic Concepts*. In their study, it was found that of the local law enforcement agencies surveyed, only 25 percent of the people in the agencies participated in federal programs, and only 4 percent participated in that particular course (Rand, 2004, p. 53). The term “counter-terrorism training” may have different meanings for different people involved in law enforcement. Rand (2004) indicated:

the phrase counterterrorism training may have different meanings to different agencies. We did not attempt to define this term in the survey, and so some of the differences in reporting may be related to the different meanings attached to the term. However, the large discrepancy in knowledge at the local level about the training offered by their state suggests that this may be an area for improving awareness (Rand, 2004, p. 51).

Regarding the demographics of large-county versus small-county, law

enforcement agencies from larger counties have been more proactive than their counterparts in addressing terrorism preparedness. Larger counties identified a higher threat perception and prepared in the following ways: 1) increased the number of personnel assigned to do emergency response planning following 9/11

Specialized terrorism units, and had those units participate in joint training; 2) conducted risk or threat assessments before 9/11; 3) provided more experience in responding to and assisting with terrorist-related investigations, and in coordinating with the FBI and other federal agencies.

In the area of preparedness planning, large and small counties were similar in that about 33% of them updated response planning after the attacks of 11 September 2001. With respect to smaller counties, Rand (2004) found that those agencies had:

- 1) Received guidance from the FBI following 9/11 as to what information to collect and pass on about the terrorist threat;
- 2) [Had] experience in coordinating with the JTTFs, the FBI, or other federal agencies; when they had interacted with the JTTFs, it was primarily to share intelligence information or to receive counterterrorism training
- 3) Made organizational changes to improve their terrorism response capabilities, with less than 5 percent increasing the number of personnel doing emergency response planning following 9/11 and only 14 percent having a specialized terrorism unit (Rand, 2004, p. 61-63).

Additionally, law enforcement agencies in smaller counties were less aware of what counter-terrorism training was offered in both their police academies and state resources. A greater need for awareness training was identified for these smaller agencies as well. The Rand study (2004) came up with eight broad conclusions for its law enforcement study, one of which was directly relevant to this study: “Law enforcement considers the most likely threats to be chemical, biological, or conventional-explosives attacks....Law enforcement’s threat perceptions provide information to DHS and ODP about what types of threats these agencies view as being important to be preparing for” (Rand, 2004, p. 110).

The survey instrument for this study specifically requested emergency managers, based on their training and experience, to indicate additional topic(s) to be included in the *Emergency Response to Terrorism: Basic Concepts*.

2.1.3 United States Emergency Medical Services Response to Terrorism

A report issued by the National Academy of Sciences – Institute of Medicine entitled *Emergency Medical Services at the Crossroads: The Future of Emergency Care* investigated the best indicators of emergency medical services’ lack of adequate training for terrorism incidents. The authors wrote:

EMS is the first line of defense in responding to the medical needs of the public in the event of a disaster, yet EMS personnel are often the least prepared and most poorly equipped of all public safety personnel. According to New York University’s Center for Catastrophe Preparedness and Response, more than half of EMTs and paramedics have received less than one hour of training in dealing with biological and chemical agents and explosives since the September 11 terror attacks, and 20 percent have received no such training. Fewer than 33 percent of EMTs and

paramedics have participated in a drill during the past year simulating a radiological, biological, or chemical attack. And in 25 states, half or fewer EMTs and paramedics have adequate personal protective equipment to respond to a biological or chemical attack (Center for Catastrophe Preparedness and Response, 2005).

The sentinel event which helped to create modern emergency medical services was yet another endeavor from the National Academy of Sciences and the National Research Council's report entitled *Accidental Death and Disability: The Neglected Disease of Modern Society* (1966). This report did not envision terrorist events in its scope as does the most current NAS/IOM report.

After the attacks of 11 September 2001, the federal government implemented training and doctrine to improve response to terrorism incidents. These steps included the creation of the National Response Plan and the National Incident Management System.

EMS was present in New York City during the attacks and played a major role in operations along with the fire service and law enforcement. Approximately 2,500 providers arrived on scene with nearly 350 ambulances. Eight EMS workers lost their lives that day (Hall, 2005 from IOM p. 183).

The Committee on the Future of Emergency Care in the United States Health System spoke to specific training for disaster management; this term, "disaster management," also includes terrorism response. The committee recommended that

establishing effective training in disaster preparedness for EMS personnel will require a coordinated and well-funded national effort that involves both professional and continuing education. The committee therefore recommends that professional training, continuing education, and credentialing and certification programs for all the relevant professional categories of emergency medical services personnel

incorporate disaster preparedness into their curricula and require the maintenance of competency in these skills (6.3). These changes would ensure that emergency personnel would remain up-to-date on their essential disaster skills and would bolster preparedness efforts (IOM, 2007, p. 200).

It is widely accepted that EMS providers are among the first on the scene of a major incident; however, they are the least supported of the three public safety professions in terms of training and equipment. The Center for Catastrophe Preparedness and Response at New York University indicated the following training information (2005) from its information brief, *Emergency Medical Services: The Forgotten First Responder*:

more than half of emergency medical technicians (EMTs) and paramedics have received less than 1 hour of training in dealing with biological and chemical agents and explosives since the terrorist attacks of September 11, and 20 percent have received no such training. In 25 states, moreover, fewer than 50 percent of EMTs and paramedics have adequate equipment to respond to a biological or chemical attack. There are no EMS-specific standards and guidelines for the training and equipment necessary to respond effectively to a terrorist attack or disaster (p. 4).

Hand-in-hand with the support issue, the study finds that many local and state EMS directors find themselves left out of the critical planning processes for major incidents, including terrorism (Institute of Medicine, 2006).

Lastly, EMS personnel may be asked to assume roles in the terrorism environment that they have not been trained for, which may be professionally unethical in the application of those roles. In fact, EMS personnel might be asked to become intelligence personnel. Petrie (2007) addresses issues and recommended practices for the potential use of EMS personnel as intelligence sensors for Terrorism Early Warning Groups (TEWG). For this endeavor, EMS personnel would have to take additional training in order to recognize and report information related to possible terrorist activities

while responding to emergencies in day-to-day operations. Petrie's stance is recommended by academicians, public safety professions, and projected best practices by DHS. He states, "these documents identify EMS personnel as valuable intelligence sensors, in part because they have access to locations not routinely available to law enforcement or intelligence communities that may contain indicators of terrorism" (Petrie, 2007, p. 1).

EMS personnel find themselves in situations that allow them to be in any type of residence, business, or other location in any geographic region of a community. Their provision of service is typically within eight minutes of a request, a very short amount of time. Petrie (2007) notes that in many instances, the reporting party does not have time to "clean" the scene; thus indicators of terrorist ideology, planning, or operations may be visible when emergency responders arrive. Additionally, most people do not react defensively to EMS personnel and may not perceive a need to clean the scene" (Petrie, 2007, p. 2).

Petrie also acknowledges that the use of EMS personnel in this role is controversial, as authoritative entities "are confounded by the complex legal, operational, professional, cultural, and societal challenges of using EMS personnel in this capacity" (Petrie, 2007, p. 1). One of the main confounding variables is a federal law, the Health Insurance Portability and Accountability Act (HIPAA), which guarantees patient confidentiality. Violation of this law can result in civil and criminal penalties totaling \$250,000 and up to ten years in prison.

Petrie (2007), outlining four recommendations for implementing the new intelligence sensor role for EMS personnel, does address training. He states:

field-level EMS personnel should be trained to collect information, through an EMS-specific program. The training curriculum must provide learners with competencies to: (a) understand the role and responsibilities of EMS personnel in information collection to support intelligence fusion and analysis; (b) identify the benefits, limitations and issues of different types of indicators of terrorism, such as trait-based indicators, behavior-based indicators, site- or incident-based indicators, and medical-based indicators; (c) recognize incident- or site-based indicators of terrorism planning and operations; (d) articulate the legal and ethical issues associated with medical confidentiality and protected health information; (e) understand the history, cultures, and beliefs of various terrorist organizations; and (f) be aware of local terrorism issues' (Petrie, 2007, p.13).

These five competencies as listed by Petrie are not part of the preexisting curriculum of the *Emergency Response to Terrorism: Basic Concepts* course. Further, it is noted that this same course does not include the idea of training EMS as intelligence sensors.

2.2 Multidisciplinary Medicine and Public Health Approaches to Terrorism Training

The University of Miami's Gordon Center for Research in Medical Education (CRME) developed its own terrorism response curriculum which utilized a simulation-enhanced format. Miller (2006) explained that many different emerging threats, both natural and man-made, were "driving the need for a better prepared and sustainable emergency-response community" (p. 239). Further, Miller justifies the "potential for mass-casualty incidents that cross broad geographic areas, and medical, political, criminal and public-safety issues dictate that training for the emergency-response community be standardized

across all disciplines, agencies, and regions” (p. 239). He also states that the “knowledge, skills, and attitudes needed to respond to these threats are unfamiliar to these populations” (p. 239). Miller’s study investigated the use of simulated-based education as a suitable manner to training public-safety responders to critical terrorism events. Miller notes:

it is generally agreed that a fundamental core of knowledge and essential skill set is necessary for anyone involved in response to acts of terrorism. Training in this area has increased in the past few years but continues to vary in content, methods, and availability. Most available programs are lecture-based and lack skill training and opportunity for practice’ (p. 239).

Miller reveals the challenges of training for terrorism events to be the inability to deliver consistent, demanding, practical training, problems that are compounded by issues with 1) program duration; 2) required prerequisites; 3) high cost; and 4) lack of literature regarding the effectiveness of this type of training (p. 239).

Miller’s study describes how he and the group at the University of Miami CRME dealt with the four challenges mentioned previously through the development of a new terrorism training curriculum. The CRME was able to implement and evaluate this program in a “multidisciplinary, interactive, and simulation-enhanced course to prepare responders to acts of terrorism” (p. 239). The learning outcomes established by the CRME curriculum development advisory committee (CDAC) came about after a substantive review of disaster-response curricula and created a multidisciplinary course that was targeted to emergency responders in the State of Florida. The identified learning outcomes were the following:

- 1) Recognize a potential terrorist incident and initiate incident operations.

- 2) Implement personal and public safety protective measures.
- 3) Perform appropriate decontamination procedures.
- 4) Implement the Incident- and Unified-Command systems and perform effective intra- and interagency communication.
- 5) Provide triage and emergency medical care specific to incident type(s) (p. 240).

The University of Miami's Emergency Response to Terrorism Course Agenda is presented in Appendix G. The course is set up as a two-day course for a total of 16 hours.

Miller explained that the likelihood of public-safety responders will ever respond to critical events such as terrorism is low; however, he makes clear that if public safety first responders do not respond to critical events such as terrorism, "their knowledge and skills will decline in 6 to 12 months after their initial training" (p. 239). At this point, there exists no follow-on course to refresh past students in the *Emergency Response to Terrorism: Basic Concepts* course as investigated by this study.

The course participants were from fire-rescue departments, hospitals and other health-care agencies. Miller's study evaluated 33 University of Miami Emergency Response to Terrorism courses, from 07 July 2003 to 03 March 2005, this included 497 participants evaluated.

In order to pass the course, the participant must have scored 84% on the examinations. Seventy-three percent of the participants initially passed the course. Those participants who were not successful in the initial attempt at the examination had

mandatory remediation and feedback on the written assessment. Pre-course and post-course evaluations were given to the course participants. The course evaluations were a 22-item questionnaire regarding the effectiveness of the course and suggestions for improving the curriculum. Miller explains “Learners ranked each component of the course on a five-point scale (1=strongly disagree, 5= strongly agree). Learners were also invited to provide additional comments (p. 244).

The study found that most participants were male and either emergency medical technicians or paramedics. The learners indicated that they learned new information in the course (52.7% to 86.7%). Additionally, the learners also indicated that they increased their confidence level by participating in the course (2.9 to 4.4 out of 5). Miller states that the most highly rated part of the course was the “hands-on skill station for emergency personal protective equipment donning” (p. 244).

Miller believes that the University of Miami terrorism response course provided participants with “not only... the opportunity to learn new principles regarding an effective response to acts of terrorism, but also to engage in deliberate practice of core skills necessary for such a response” (p. 245). Deliberate practice, as described by Miller, involves:

- 1) Repetitive performance of psychomotor skills in a focused domain, coupled with
- 2) rigorous skill assessment, which provides learners
- 3) specific, informative feedback, that results in
- 4) better skills performance in a controlled setting (p. 245).

The University of Miami terrorism response course utilized a simulation-enhanced teaching modality in their skills stations that allowed for a great deal of “hands-on” application. This teaching method included scripted scenarios and actors as patients. Miller adds:

the use of standardized patients as victims of multiple types of terrorism events facilitated the training and practice of critical skills. Learners actually practiced the proper technique for ambulatory decontamination and burn-victim care and demonstrated their competence. The use of a wide range of task trainers and simulator manikins enhanced the psychological fidelity of all skills stations and scenarios for training and testing. Interactive multimedia video exercises portrayed a wide range of casualties, enabling learners to practice triage. Throughout the course, we repeatedly emphasized and evaluated crisis-resource management principles with emphasis on cross-disciplinary communication (p. 245).

Miller felt that one of the most important foundations for the success of the program was the building of relationships with local, state, and federal agencies. The CRME group at the University of Miami also studied skills improvement with their Emergency Response to Terrorism training as presented by Scott (2006). He studied individual and team skills acquired from the course from March 2004 to January 2005.

When Scott reviewed team skills for the course, he evaluated 220 learners who were placed into 39 teams. There are four skills station scenarios for the course. It was found that substantive improvement was found across the board between the first and second rotations, with some slight improvement noted with the third and fourth rotations.

Scott evaluated 24 randomly selected course participants in the four individual skills stations. In each station, skill improvement was noted, especially in the areas of donning personal protective equipment and administering a Mark 1 nerve agent antidote.

A group from Columbia University led by Markenson (2005) offered a list of core competencies for terrorism preparedness for multidisciplinary health care professionals.

This effort focused primarily on bioterrorism. For this particular study, a significant literature review was attempted, with the following finding:

the curriculum team sought peer-reviewed articles discussing the education of health care providers in emergency preparedness and terrorism, including articles on competency development. The search revealed that literature on competencies for emergency and terrorism preparedness was relatively sparse (p. 520).

This same study presented a set of curricula as a starting point that can be applied to other health care disciplines in a multidisciplinary manner. Markenson called for the “incorporation of terrorism preparedness and response material into the curricula for every health professions school in the nation” (p. 518). He notes that the health care workforce in the United States to be second only to the armed forces and believes that it is critical to have all health care professionals be trained and prepared to operate in the terrorism incident environment. He adds, “the sparse data available suggest that health professionals do not currently feel competent or knowledgeable in this area, although they would like to be” (p. 517).

Markenson notes that medical schools have begun to incorporate CBRNE topics into their curriculum and that many health care schools across the nation are attempting to fill the terrorism response/preparedness gap by providing training through continuing medical education (CME). However, there is a problem with this method, Markenson notes:

while this use of CME programs is an attempt to incorporate

information on CBRNE agents into health care schools, it is lacking because it is not designed for the student or based on the students' knowledge level and functional role. In the end, little guidance is currently available regarding the content and teaching methods that would be most appropriate to educate health care students on emergency preparedness and CBRNE agents topics' (p. 519).

Markenson and the group at Columbia University had four goals during their Bioterrorism Curriculum Development Project:

- 1) Thoroughly examine the existing curricula at each school on the Health Sciences Campus (Columbia) to identify appropriate areas for insertion of new complementary material.
- 2) Develop learning modules based on competency.
- 3) Identify and develop core material that cuts across all disciplines.
- 4) Construct specific content to fit each discipline (p. 520).

The methods that were utilized for instruction included "lecture-based classroom courses, Internet-based distance learning, and use of a disaster learning laboratory" (p. 521).

When Markenson and his group began the process of literature review using Medline, Cinahl, Embase and other databases, they found the "search revealed that literature on competencies for emergency and terrorism preparedness was relatively sparse" (p. 520).

Four broad-based categories of core competencies were created for the curriculum development project:

- 1) Emergency management and preparedness
- 2) Terrorism and public health emergency preparedness

- 3) Public health surveillance and response
- 4) Patient care for disasters, terrorism, and public health emergencies (p. 521).

One of the results of the study provided the five “*Core Competency Subject Areas for Terrorism and Public Health Emergency Preparedness*” (p. 524). These five areas were

1. Chemical, biologic, radiologic, nuclear, and explosive agents
2. Biologic agents
3. Chemical agents
4. Radiological agents
5. Personal protective equipment and decontamination (p. 524).

The American College of Emergency Physicians’ Terrorism Task Force Report (2202) entitled: *Positioning America’s emergency health care system to respond to acts of terrorism (2002)*, recommended six specific goals to address a comprehensive approach to community response plan for terrorism/major disaster events:

- 1) Improve communications infrastructure
- 2) Improve community-based planning
- 3) Increase community-based planning
- 4) Increase community capacity to deal with disasters
- 5) Improve disease surveillance, disease reporting, and field laboratory identification systems

6) Protect first responders and emergency department personnel from the effects of biologic, chemical, and nuclear agents

7) Increase and enhance training programs, continuing education, and community drills for mass casualty incidents (p. 2-3).

To date, it is not known whether there has been any impact resulting from this report, as no follow-up reports to this report have been generated from the American College of Emergency Physicians. However, it was noted that the last recommendation was that responders “must be trained to detect and respond to all types of potential diseases and disasters in a coordinated and integrated way” (p. 3)

2.2.1 Characteristics of Adult Education and the Public Safety Professions

There are accepted principles and practices of adult education; many of them apply to public safety education and training. Caffarella (2002) indicates the following list that she used in developing her Interactive Model of Program Planning:

- Adults have a rich background of knowledge and experience and learn best when this experience is acknowledged and new information builds on their past knowledge and experience.
- Adults are motivated to learn based on a combination of complex internal and external forces.
- All adults have preferred and different ways of processing information.
- Adults are not likely to willingly engage in learning unless the learning is meaningful to them.

- For the most part, adults are pragmatic in their learning; they want to apply their learning to present situations.
- Adults come to a learning situation with their own personal goals and objectives, which may or may not be the same as those that underlie the learning situation.
- Adults prefer to be actively involved in the learning process rather than passive recipients of knowledge.
- Adults learn in interdependent, connected, and collaborative ways as well as independent, self-reliant modes.
- Adults are more receptive to the learning process in situations that are both physically and psychologically comfortable.
- What, how, and where adults learn is affected by the many roles they play as adults (for example, worker, parent, partner, friend, spouse) and their own personal contexts as learners, for example, gender, race, ethnicity, social class, disabilities and abilities, and cultural background (p. 29).

Typically, teaching and learning in the public safety professions lend themselves to the same techniques as described by Caffarella. The great majority of public safety practitioners are adult learners, as most all public safety professions have an entry-level age requirement of 18 to 21 years.

Most adult learners in the public safety professions seem to possess characteristics of self-direction, motivation, proclivities toward problem-solving, utilizing experiential

learning and using computer-based instruction. No studies were found that address learning characteristics and public safety professions.

All of the public safety professions have some type of compulsory requirement of continuing professional education in order to maintain certification. The survey instrumentation for this study focused on the areas of learner motivation, experiential learning, and computer-based instruction (CAI).

2.2.1.1 Self-direction and motivation. Brockett and Hiemstra (1991) noted recommendations for research and recommendations for practice that seem to be directly applicable to the field of public safety education and self-direction learning in their text, *Self-Direction in Adult Learning: Perspectives on Theory, Research, and Practice*. One of their specific recommendations related to research has implications for public safety education: “There is a need for research on the roles and functions of institutions relative to self-direction in adult learning” (p. 222). Further, they addressed the practice aspect of adult learning, stating, “it is important to help learners identify and utilize a variety of resources” (p. 224). This is important in the public safety environment as educational venues may not be available, either physically or with issues related to time constraints. They add: “the potential of networking for and among self-directed learners needs to be more fully explored, understood, and exploited” (p. 224).

Current assumptions regarding adult learner motivation may be applied to the public safety professions. For example, Wlodkowski (1993) outlined five critical assumptions for helping adults wanting to learn. They are as follows:

1. People are always motivated;
2. People are responsible for their own motivation;
3. If anything can be learned, it can be learned in a motivated manner;
4. There is no best way to instruct.

Every instructional plan needs a motivational plan (Wlodkowski, 1993, p. 12-14).

The above list of assumptions may be indicative of the current situation in the public safety professions. However, further research is needed. To date, there exist no peer-reviewed studies that examine public safety and learner motivation, especially in the area of disaster management and/or terrorism response.

Leamson (1999) indicates, “to become motivated to learn, the one thing that a student must experience is a need to learn – feel a desire to know” (p. 74). Public safety providers need to learn how to respond to terrorism-related incidents, as the lives of civilians and their own lives depend on the public safety personnel’s proficiency during the exigent phase of initial terrorism incident response and operations.

When considering motivation, Houle’s (1961) study of 22 adults included those who were “conspicuously engaged in various forms of continuing learning” (p. 13). Houle found that there were three different learning orientations by the adult learners. He did note that “while they were basically similar, they did vary in terms of the major conception they held about the purposes and values of continuing education” (p. 15). The three learning orientations were goal-oriented learners, activity-oriented learners, and learning-oriented learners.

Goal-oriented learners “are those who use education as a means of accomplishing fairly clear-cut objectives” (p. 15). Activity-oriented learners “are those who take part because they find in the circumstances of the learning a meaning which has no necessary connection, and often no connection at all, with the content or the announced purposes of the activity” (p. 15-16). Learning-oriented folks “seek knowledge for its own sake” (p. 16).

Merriam and Caffarella (1999) found additional work by Boshier, Morstain, and Smart. This work extends Houle’s work, offering six reasons for adult participation in educational endeavors:

- 1) Social relationships. This factor reflects participation in order to make new friends or meet members of the opposite sex.
- 2) External Expectations. These participants are complying with the wishes or directives of someone else with authority.
- 3) Social Welfare. This factor reflects an altruistic orientation; learners are involved because they want to serve others or their community.
- 4) Professional Advancement. This factor is strongly associated with participation for job enhancement or professional development.
- 5) Escape/Simulation. This factor is indicative of learners who are involved as a way of alleviating boredom or escaping home or work routine.
- 6) Cognitive Interest. These participants, identical to Houle’s learning-oriented adults, are engaged for the sake of learning itself (p. 55).

Exploration of social relationships and escape are probably not motivators for many in public safety; however, any/all of the other four reasons for engaging in continuing education may typify public safety providers. Tennant and Pogson (1995) identify the issue of context and adult education. They write:

Problems on tests are typically decontextualized, whereas everyday problems are contextualized. By contextualized, we mean that all the operating variables have to be taken into account when approaching the solution – none can be assumed to be constants. Real-world problems can't escape such issues as why the problem is seen as important, who will benefit from the solution, and what events led up to the problem (p. 31).

Tennant and Pogson continue, "In such case scenarios, problems cannot be fruitfully approached without a detailed understanding of context" (p. 32).

In the area of continuing professional education, Knox (1993) states:

"A large and increasing number of people work in occupations at some stage of professionalization. Depending on definition, estimates of the percentage of professionals within the U.S. work force range from 15 to 28 percent" (Cervero, 1988).

Central to the concept of "professionalism" is the process of systematic learning to prepare for the field of practice and to maintain proficiency in a context of changing knowledge base and practice. Evolving professional careers necessitate is a continuum of preparatory and continuing education to enable practitioners to progress from novice to expert. An important part of this systematic learning is self-directed, in addition to participation in formal education supplied by educational institutions and non-formal education furnished at the workplace, by professional organizations, and by other providers (Houle, 1980, p. 275).

Houle (1987) notes “a major criterion of defining a profession is that the professional possesses a specialized body of knowledge and skills that are acquired during a prolonged period of education and training” (p. 87). When providing a definition of profession in the context of public safety, perhaps the definition as provided by Hughes (1963) fits the best. He states: “Professions profess. They profess to know better than others the nature of certain matters, and to avow better than their clients what ails them or their affairs” (p. 661).

Hughes’ definition of a “professional” fits within the construct of all three public safety roles: fire service, law enforcement, and emergency medical services. Systematic learning to prepare for practice as well as continuing education are central to all three public safety professions as well. Public safety providers who are self-directed may be motivated to seek out additional terrorism response training.

Additionally, Knox (1993) notes that “Continuing professional education is closely associated with both role performance and the organizational and societal context in which practice occurs. Because professional role performance is recognized as important to society, there is growing interest in performance standards and accountability” (Cervero, Azzaretto, and Associates, 1990; Cervero and Scanlan, 1985). Thus, strategic planning of continuing professional education should consider not only combinations of knowledge and experience to maintain proficiency, but also contextual influences such as the impact of professional performance on an increasingly informed public and relations between continuing education providers (p. 276).

These salient statements by Cervero and Associates ring as truly to those involved in the public safety professions now as they did more than 20 years ago.

2.2.1.2 Technology and computer-based instruction. As previously observed, the *Emergency Response to Terrorism: Basic Concepts* course may be taken in one of two formats, classroom or computer. The course, in either format, has a final examination. The classroom course offers 16 hours of contact time whereas the computer-based course offers 10 hours of contact time. The major difference between the two courses is the group scenario interaction for simulated events.

When considering computer-based instruction, Merriam and Caffarella (1999) write:

clearly, technology and the information age that it spawned are changing the nature of adult learning. Professionals whose knowledge becomes outdated in a few years, auto mechanics who must now master sophisticated electronic diagnostic systems, adults who must learn new ways to bank or shop from home computers: all must be able to function in a fast-changing society, and this necessitates continued learning. Technology is not only making learning mandatory, it is providing many of the mechanisms for it to occur. Computer-assisted instruction, teleconferencing, interactive videodisk, the Internet, and World Wide Web are expanding the possibilities of meeting the growing learning needs of adults (p. 17).

Additionally, Merriam and Caffarella address formal institutional settings when they note that in more recent years, as the use of technology has increased in the delivery of learning programs, our picture of learning in formal settings has expanded dramatically (p. 26).

Within the arena of computer-assisted instruction, Rodgers and Withrow-Thorton (2005) studied instructional format and learner motivation in three delivery modalities: 1) lecture, 2) video, and 3) computer-based instruction. They proposed that “selecting a medium that motivates students is an important consideration” (p. 333). Their study was unique, as it targeted adult students instead of those in grades K-12. Ninety-six participants were divided into the three groups, and each group received training through lecture, video, or computer on the same subject matter (p. 333). The study found that computer-based instruction was a “more motivating medium” (p. 338) than lecture or video-based instructional modalities in the areas of attention, confidence, and satisfaction.

Lowe (2001), via a review of five meta-analyses of computer-based instruction versus traditional classroom instruction, found little or no difference between the two instructional modalities for teaching. She did note that “instructor bias and type of application” (p. 163) could have been confounding components that would have found the computer-based instructional modality to be more effective than traditional classroom instruction.

Zandvliet and Farragher (1997) conducted a study concerning adult learners and use of computer-based testing. They tested 50 adult students enrolled in a computer course at a community college and compared the equivalence of computer-based examinations and written examinations. They found that there were no significant differences between the testing formats. In fact, student preference was for the computer-

based examination, especially after repeated exposure to the written formats, even though it took students longer to finish the computer-based test.

The *Emergency Response to Terrorism: Basic Concepts* course may be taken in one of two formats, classroom or computer. The course, in either format, has a final examination.

2.2.1.3 Experiential learning. All terrorism incident responder trainees are adults and require adult education techniques of instruction. Therefore, theory and research in adult learning are important filters for the study. Many adult education theorists and researchers indicate the importance of experiential learning for adults. While beginning to explore the area of experiential learning and public safety, Fenwick's text (2003), *Learning through experience: Troubling orthodoxies and intersecting questions*, defines experiential learning in the following manner:

the term 'experiential learning' is often used both to distinguish the flow of ongoing meaning-making in our lives from theoretical knowledge and to distinguish non-directed 'informal' life experience from 'formal' education. Much adult learning is commonly understood to be located in everyday workplace tasks and interactions, home and family activity, community involvement, and other important sites of non-formal and sometimes unacknowledged education. Many of us believe that our skills and concepts, and certainly the development of our practical knowledge, the know-how that we use in our daily activities and work, are best learned through 'doing' (p. 1).

The public safety professions are quite pragmatic in their operational modality. If a problem presents itself, the providers take care of the problem in the most sensible, efficient manner possible, and then clear the scene. The public safety environment is chaotic, and an experienced provider (i.e. firefighter, police officer, or paramedic) is of

great value. Past experience in a dynamic, dangerous environment where decisions can be critical with very little time to reflect is of utmost importance. The live, real-time environment is very unforgiving. Much of what has been learned in the public safety professions has been through trial and error. It is, unfortunately, through mistakes that personnel in these professions learn what works or does not in exigent situations. With the exceptions of the terrorism incidents in Oklahoma City, New York City, and Washington D.C., we actually have very little in the way of terrorism response experience and “know-how” in handling this type of situation.

The public safety professions may be thought of as a community. In Fenwick’s (2003) text, she identifies a “Community of Practice.” This idea fits well with the collective public safety educational effort. She states:

an alternative view of learning is proposed by situative perspectives. These argue that learning is rooted in the situation in which a person participates, not in the head of that person as intellectual concepts produced by reflection. Knowing and learning are defined as engaging in changing processes of social activity (p. 25).

Further, Fenwick introduces work by Wenger (1998). He describes the communities of practice as “the property of a kind of community created over time by the sustained pursuit of a shared enterprise. . . communities of practice” (p. 45). He also notes a difference between school learning (institutional) versus situated learning, he calls this “learning in the context of our lived experience of participation in the world” (p. 3). All of the public safety professions constantly, through a process of quality improvement and shared experiences, learn from specific emergency instances and attempt to improve the delivery of exigent care and protection.

Wenger theorizes that learning has four main constructs: community, identity, meaning, and practice. All four of these constructs fit into the learning environment in public safety. Public safety professions and community are intertwined, as public safety professions serve the community as a whole. As explained by Wenger, “Identity formation is a lifelong process whose phases and rhythms change as the world changes” (p. 263).

Public safety education is a constantly changing dynamic as new trends in technology, culture, health, and the like must be considered in order to get the job done. Meaning in the public safety environment is tied to Wenger’s term “meaning” as it translates to “our ability to experience the world and our engagement with it as meaningful” (p. 4). This is why many people get into the public safety professions in the first place.

Finally, Wenger explains “practice” as “a way of talking about the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action” (p. 5).

Different public safety entities (police, fire and EMS) must bring together their experiences and knowledge of the correct modalities of action to contain and effectively manage a terrorism incident. Not only do the public safety professions have to work in this “mutual engagement in action,” but they must also work with communities, political entities, and governmental regulatory agencies in order to bring order out of chaos. Perhaps the best explanation of the dynamic environment of terrorism response and public safety comes from Stacey (1995) as he explains, “the most important learning we

do flows from the trial-and-error action we take in real time and especially from the way we reflect on these actions as we take them” (p. 17).

2.3 Chapter Summary

All three public safety professions are acutely aware of the terrorism threat and the changes needed in day-to-day operations to combat the threat when it arises. The first step in combating the terrorism threat is training.

The fire service profession is the lead agency that would handle all non-law enforcement issues related to a terrorism incident. Their specific duties would be more in the post-incident phase than the pre-incident phase of a terrorist event. This profession suffers from a lack of terrorism training, training assessment, funding, and staffing.

The law enforcement profession is the lead agency that would be in charge of security and enforcement issues in the pre- and post-incident phases of a terrorism incident. Due to the widely varied jurisdictions of law enforcement, (e.g. municipal, county, state, and federal) there are many different perceptions of terrorism risk and resultant training for that risk. The amount of terrorism response training varies greatly for law enforcement across the United States.

The emergency medical services profession seems to be the odd man out. This profession would be most involved in the post-incident phase of a terrorism incident. EMS is noted to be the least trained, least equipped and least funded of the three public safety professions, although they would be wholly responsible for all casualty patient care during an incident. The National Academy of Sciences, Institute of Medicine report

entitled, *Future of Emergency Care: Emergency Medical Services at the Crossroads*, called for professional training and continuing education in the area of disaster management, including terrorism incident response and management.

The multidisciplinary medicine and public health approach to terrorism incidents and response indicate two things. First, the peer-review research is sparse. Second, opinions vary on which types of terrorism response need to be reviewed (for example, the medicine/public health focuses primarily on bioterrorism).

The three public safety professions and the principles of adult education seem to interrelate quite well when addressed in the context of terrorism incident response education. The tenets of learner motivation, experiential learning, and computer-based instruction were questioned in the survey instrumentation for this study.

Learner motivation in the context of terrorism incident response for public safety personnel is evident in two of Caffarella's (2002) principles and practices in her Interactive Model of Program Planning. Public safety providers know that learning terrorism response techniques are meaningful as those techniques will possibly save their lives. Consequently, public safety providers fit the pragmatic definition, as they want to apply their learning to specific situations (i.e. terrorism response).

Experiential learning is a critical instructional tool for all three public safety professions. The exigent and dynamic public safety environment is not forgiving of mistakes and personnel must learn what works and what does not work in certain situations. The terrorism situation is of particular concern as not only civilian lives are at stake, but so are the lives of those trained to save them.

Computer-based instruction is an exceptionally valuable tool to all three public safety professions; however, it may not be applicable or effective in all aspects of terrorism incident response and management training. It does offer the ability for skilled educators to keep up with the pace of a dynamic environment such as exigent public safety operations. This type of instruction does not typically lend itself to a great deal of dialogue; however, it is noted that this can be accomplished at some level beneficial to all constituents.

CHAPTER THREE

METHOD

3.1 Introduction

This study examined the perceptions of county-level emergency managers in North Carolina and Tennessee as to the appropriateness and sufficiency of current available entry-level training materials for public safety personnel in the area of terrorism incident response and management. Specifically, this descriptive study was designed to assess the perceived value of a course developed by the National Fire Academy, the United States Department of Justice, and the Federal Emergency Management Agency, entitled *Emergency Response to Terrorism: Basic Concepts* among county-level emergency managers in North Carolina and Tennessee.

The data collection was accomplished by the use of postal surveys and telephone interviews. This chapter includes description of the research questions and data analysis, selection of participants, survey instrumentation, procedure, interview instrument and procedures, administration, total returns, and data analysis procedures.

3.2 Research Questions and Data Analysis

There were five foundational research questions to this study. The survey questions and statistical analyses described below were used to answer each of the following questions:

1. *How do North Carolina and Tennessee emergency managers perceive the current Department of Justice/Department of Justice/Federal Emergency Management Agency's*

Emergency Response to Terrorism: Basic Concepts curriculum for public safety

providers in the discipline of terrorism incident response?

This question was answered through survey question 3 found on the second page of the survey instrument. Responses to Question 3 were recorded on a 5-point Likert-type scale that addressed appropriateness of curriculum topic (content) and a 5-point, low to high scale indicating importance of this topic (content) for the public safety provider. Response frequencies and percentages were calculated.

2. How are North Carolina and Tennessee emergency managers using the current curriculum?

This research question was answered through asking if the curriculum was used and if there were any other strategies and/or activities used by their county in terrorism management education. Survey items 1, 2, and 10 addressed this question. Question 10 was presented as open-ended questions (fill in the blank), and common themes and key words were identified in the answers provided by the county-level emergency managers or their designees.

With respect to this research question, specific comparisons of groups were made. They are presented in Chapter 4 and discussed in Chapter 5. These categorical comparisons were a) County population and perceived threat level probability for a terrorism incident; b) County population and *Emergency Response to Terrorism: Basic Concepts* course delivery preference; c) Perceived threat level probability and *Emergency Response to Terrorism: Basic Concepts* course delivery preference.

3. Do North Carolina and Tennessee emergency managers believe that the current curriculum should be modified for public safety personnel use in these two states, and if so, how?

This research question was answered primarily by responses to two qualitative questions concerning additional topics for inclusion in the curriculum and any other additional comments about the pre-existing curriculum. Questions 4 and 8 were presented as open-ended questions (fill-in-the-blank). Common themes and key words were identified in the answers provided by the county-level emergency managers.

4. Based on the responses of North Carolina and Tennessee emergency managers and previous research, how should the current curriculum be modified?

This question was answered through triangulation of data from survey respondents and review of the literature concerning terrorism incident response education. Questions 4, 8, and 10 were reviewed for common themes, key words and comparisons were made as to population and threat level of terrorism event, survey question 11.

5. To what extent are the curriculum and curriculum delivery methods currently in use in terrorism event response by public safety first responders consistent with the research on adult learning and learners?

Adult learners are the primary audience for the *Emergency Response to Terrorism: Basic Concepts* course. The course is delivered in two different modalities, traditional classroom instruction and web-based computer program, and it was important

to explore the characteristics of adult learners in relation to the two main delivery methods of this course.

Information pertinent to this research question emerged from responses to three questions on the third page of the survey, questions 5, 6, and 7. These questions asked about preferred method of course delivery (either traditional classroom or computer-based), most effective method of course delivery, why they thought their preferred method was more effective, and whether or not public safety providers in their county sought out courses or training to better enable them to manage terrorism incidents. Question 7 was presented as an open-ended question (fill in the blank), and common themes were identified in the answers provided by the county emergency manager.

With respect to this research question, specific comparisons of groups were accomplished by categorical comparisons and are presented in Chapters 4 and 5. These categorical comparisons were

- 1) County population and perceived public safety learner motivation by the respondent;
- 2) Perceived threat level probability and perceived public safety learner motivation by the respondent.

Existing theory and research in adult education also contributed to answering this research question; particularly the literature on learner motivation and experiential learning. Survey Question 9 specifically addressed the issue of the emergency manager's perception of learner motivation, i.e. the motivation of their counties' public safety personnel.

3.2.1 Selection of Participants

County-level emergency managers were chosen for the survey population of this investigation, as they are the coordinating individuals for public safety first response to a terrorism incident. EMS, fire, and law enforcement would be coordinated by a county-level emergency management agency during such an event. The 194 county-level emergency management offices in North Carolina and Tennessee were found to be in three specific stratified groupings. The United States Census Bureau definitions of “rural,” “urban cluster,” and “urbanized areas” were utilized to define three distinct stratifications and are described in detail in this chapter under “Survey Responses and Additional Mailings.” The complete listing for each state’s population demographics is found in Appendices A and B. The three population stratifications for both states are presented in Table 1. Table 2 indicates distribution by population stratification for North Carolina.

Table 1: Number of North Carolina and Tennessee Counties at Each Population Level (N= 195)

Population	Number of Counties
4,000-24,999	66
25,000-49,999	58
50,000-899,999	71

Table 2: North Carolina Population Stratification

(N=100)

Population Strata	Frequency	Percentage
4,000 to 24,999	27	27%
25,000 to 49,999	27	27%
50,000 to 900,000	46	46%
Total	100	100%

Note: N=100 total counties for North Carolina. One Emergency Management Office in North Carolina serves two counties. One of the counties falls into the lowest population stratum; the second falls into the middle population stratum.

Table 3: Tennessee Population Stratification (N=95)

Population Strata	Frequency	Percentage
4,000 to 24,999	39	41.10%
25,000 to 49,999	31	32.60%
50,000 to 900,000	25	26.30%
Total	95	100%

Table 3 indicates distribution by population stratification for Tennessee.

The description of the role of the county-level emergency manager used in this study is outlined in the Federal Emergency Management Agency course entitled *IS-001 – The Emergency Manager: An Orientation to the Position*:

the emergency manager is not the main actor. During a disaster, the emergency manager helps manage the application of resources that other managers control. A fire chief, a police chief, a public works director, and a medical services coordinator are emergency response managers who control resources. The emergency manager does not replace them or usurp their jobs. The emergency manager helps these managers apply their resources wisely and in a coordinated way' (Federal Emergency Management Agency, 2002, p. 2).

The role of the managers in coordinating the *Emergency Response to Terrorism: Basic Concepts* training courses as well as coordinating the actions of all elements of public safety in a disaster event was very important in the selection of this population for the study. North Carolina and Tennessee were chosen because both states have similar demographics, almost the same number of counties, and the states border each other.

North Carolina has 100 counties; Tennessee has 95 counties. One emergency management office in North Carolina serves two counties (Camden and Pasquotank); thereby creating a study population of 194 emergency managers. When the populations of both counties are added together, the total population is 41,782 persons.

Numbers of emergency managers and their staffs vary across both states due to variables such as county size, population, resources, and funding. The senior emergency manager or management coordinator for each office was the one who was invited in the cover letter to complete the survey.

If it turned out that the senior emergency manager or emergency management coordinator was not familiar with the *Emergency Response to Terrorism: Basic Concepts* course, then she/he was to forward the survey to someone in the organization who was familiar with the course and have that individual complete the survey and return it to the investigator.

3.2.2 Instrumentation

3.2.2.1 Survey. The first page of the survey questioned the emergency managers about their familiarity with the course *Emergency Response to Terrorism: Basic Concepts* and asked whether they were credentialed to teach the course. If the emergency manager was not familiar with the course and was not credentialed to teach the course, then he or she was to answer “no” to both questions and return the survey. If the emergency manager was familiar with the course, and credentialed, he or she was asked to continue answering pages two and three. If the emergency manager was familiar with the course, but not

credentialed to teach the course, he or she could still continue in answering questions on pages two and three and return the survey.

The second and third pages of the survey dealt with the *Emergency Response to Terrorism: Basic Concepts* curriculum and opinions/perceptions of the emergency managers as to its appropriateness, importance, and the possibility of any needed changes to the existing curriculum. Other questions included asking the respondents about preferred course delivery method, their perceived course delivery efficacy, their counties' public safety personnel searching out courses to better enable them to respond to terrorism incidents, additional activities that the respondents utilized to ensure learning in order to respond to terrorism incidents, and the respondent's perceived risk of terrorist probability in each county.

In essence, questions on pages two and three focused on two things:

1. Are public safety personnel training on the right things in order to respond effectively to terrorist events?
2. Are public safety personnel training appropriately to respond to terrorist events?

The survey instrument used in the study was developed by the investigator, as no existing evaluative instrumentation was available for the five research questions posed. The instrument created was three pages in length and requested both qualitative and quantitative information. The beginning outline for the survey instrument followed the ERT: BC curriculum content and after the process of development of the five research questions, survey item questions were developed to address them. A literature review

and identification of the Global War on Terror (GWOT) issues, past terrorism incidents in the United States, as well as literature review on characteristics of adult learners helped guide further the creation of the instrument. Personal dialogue with emergency managers, as well as emergency management faculty at the University of North Carolina at Chapel Hill, contributed to the refinement of the instrument. The most important counsel came from Dr. Judith Boser at the University of Tennessee at Knoxville on issues of survey development. The three-page quantitative and qualitative survey instrument is provided in Appendix F.

The survey consisted of thirteen questions. The first page of the survey contained two questions which provided for the initial screening of the respondent as to his or her ability to complete the remainder of the survey.

The survey instrument was approved by the investigator's dissertation committee after a careful revision process. The survey was pilot tested with faculty of the Community Preparedness and Disaster Management Program at the University of North Carolina at Chapel Hill, faculty of the Emergency Medical Care Program and the Criminal Justice Program at Western Carolina University, faculty of the Public Safety and EMS Programs at Carteret Community College in Morehead City, North Carolina, and faculty from the Division of Public Safety at Walters State Community College in Morristown, Tennessee.

3.2.3 Procedure

A contact/ mailing list was obtained from the web sites for the North Carolina Division of Crime Control and Public Safety – Division of Emergency Management and the Tennessee Emergency Management Agency. Addresses were found for all 194 emergency management agency offices in both states. When the survey was mailed out, a self-addressed stamped envelope was placed in the mailout packet to facilitate return of the survey.

Initially, the cover letter/informed consent and survey were sent to all 194 county-level emergency managers in North Carolina and Tennessee. The cover letter and informed consent for the study is found in Appendix E. The cover letter indicated the purpose of the study to be a dissertation effort and acknowledged the importance of the study to the emergency management profession, and stated the implications of participation and/or refusal of participation per the IRB guidelines of the University of Tennessee. The cover letter also defined informed consent for the participants as completion and return of the instrument. The cover letter stated:

“Your participation in this study is completely voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed, as you choose. Return of the completed survey (questionnaire) constitutes your consent to participate. Please note that neither your name nor the name of your county will be used in any portion of the report from this survey.”

The survey instrument, cover letter, and research procedures were approved by the University of Tennessee at Knoxville Institutional Review Board before the research was initiated. A post office box for survey returns was purchased through the United

States Postal Service, Crossroads Station, St. Petersburg, Florida for a period of six months. A postcard was sent to the survey recipients who did not respond within the first fourteen days. Any surveys returned because of incorrect address were re-sent to those agencies.

3.2.4 Survey Responses and Additional Mailings

The initial survey return rate was 34.5%. This included completed, usable surveys (n=67). In order to increase the return rate, a second mailout was sent to 100 agencies. These 100 agencies were chosen for their particular population stratifications to promote confidence in the representativeness of the data in the study. For each of the second surveys, the investigator attempted to make phone contact with the emergency management office to solicit completion and return. The second mailout increased the response rate to 41.8% (n= 81). After the second mailout, it was apparent that the return rate was still less than desirable. The author sought counsel from the dissertation chairperson and the survey instrument expert. After meeting with both professors, an alternative collection method was added to the project.

The population strata were selected because they matched the United States Census (2000) definition of population demographics. The Census Bureau explains its definitions as follows:

“Rural” – less than 2,500 persons

“Urban Cluster” – greater than 2,500 persons up to 49,999 persons

“Urbanized Areas” – greater than 50,000 persons

The first two criteria in the population stratifications mentioned previously fit into the Urban Cluster definition per the U.S. Census Bureau definitions. The population less than 2,500 was notable, as these areas are rural. After careful evaluation of the population data in both states, the 194 counties were found to be essentially split into thirds. This was considered by the investigator to be more simplified and provided advantages to generalize respondent data. The 194 counties fell into these three population stratifications as follows:

Population less than 25,000 – 65 counties in NC and TN

Populations between 25,000 and 50,000 – 58 counties in NC and TN

Population greater than 50,000 – 71 counties in NC and TN

The goal of a third survey instrument dissemination was to increase the return rate to better than 50.0% in all three population demographics in order to make generalizations from the data. The breakout of the first two survey mail outs needed to be determined in order to calculate the numbers needed to achieve the 50% or greater return rate for all three population stratifications. These breakout data are as follows:

1. *For the areas defined as less than 25,000*, there were a total of 65 counties, 26 in North Carolina and 39 in Tennessee. The 22 returned surveys indicate a total response rate from this population category of 33.8%. Seven of 26 counties from North Carolina in this population category responded, 19 counties did not respond. The North Carolina response rate for this category was 26.9%. Fifteen of 39 Tennessee counties in this population responded; 24 counties did not respond. The Tennessee response rate for this

category was 38.5%. There were 43 counties to contact in North Carolina and Tennessee in this population category.

2. *For the areas defined as greater than 25,000 and less than 50,000*, there was a total of 58 counties, 26 in North Carolina and 32 in Tennessee. The 25 returned surveys indicate a total response rate from this population of 43.1%. Twelve of 26 counties in this population category from North Carolina responded; 14 counties did not respond. The North Carolina response rate was 46.2% for this category. Thirteen of 32 counties in Tennessee this population category responded; 19 counties did not respond. The Tennessee response rate was 40.6%. There were 33 counties to contact in North Carolina and Tennessee in this population category.

3. *For the areas defined as greater than 50,000*, there were a total of 71 counties, 45 in North Carolina and 26 in Tennessee. The 34 returned surveys constituted a total response rate from this population of 47.9%. Twenty-four of 45 counties in this population category from North Carolina responded; 21 counties did not respond. However, this response rate was 53.3% and met the return rate goal for the study. Ten of 26 counties in this population category from Tennessee responded; 16 counties did not respond. Therefore, the Tennessee response rate was 38.5%. There were 37 counties total to contact in North Carolina and Tennessee in this population category.

It is noted that the overall return rate for the study needed to be better than 50% in all population stratifications in each state in order to generalize from the data. The strategy to meet that goal was as follows:

1. *With respect to the population demographic less than 25,000:*

For North Carolina, at least 7 additional surveys needed to be completed for there to be a minimum 50% return rate. For Tennessee, 5 surveys needed to be completed for there to be a minimum 50% return rate. Overall, 12 surveys needed to be completed to achieve the desired return rate for this population category.

2. *With respect to the population demographic greater than 25,000 and less than 50,000:*

For North Carolina, 2 surveys needed to be completed for there to be a minimum 50% return rate. For Tennessee, 4 surveys needed to be completed for there to be a minimum 50% return rate. Overall, 6 surveys from both states needed to be completed to achieve the desired return rate for this population stratification.

3. *With respect to the population demographic greater than 50,000:*

For North Carolina, there existed a greater than 50% survey return rate from the initial mailout. This met the return rate goal for the study; no further contacts needed to be made. For Tennessee, 4 surveys needed to be completed for there to be a minimum 50% return rate. Overall, 4 surveys from the state of Tennessee needed to be completed to achieve the desired return rate for this population category.

To achieve the overall desired return rate for the study, it was found that 22 additional surveys were needed and that those surveys must be completed in the categories as noted previously.

3.2.5 Interview Instrument and Procedures

For the third phase of survey dissemination, it was determined that a telephone interview process might be the most appropriate method to achieve the return rate desired. The telephone interviews were guided by a script that the investigator strictly followed. The telephone interview script may be found in Appendix H. The questions used in the telephone interviews were exactly the same as those on the survey. The original survey instrument was the template for the telephone interview script for the third phase of the survey dissemination.

Counties were selected via a random number table as found in Alreck and Settle's (1995) text, *The Survey Research Handbook*. It was thought that some counties might not want to participate in the study, and had that been the case, they would have been recorded as declinations in the presentation of the data. However, this was not the case, as all of the phoned participants were willing to respond.

3.2.5.1 Interview administration. All counties in North Carolina and Tennessee were assigned a number (North Carolina was NC 01 through NC 100 and Tennessee was TN 01 through TN 95), from those numbers, a rank order was prepared from the random number table to make telephone contacts. This procedure allowed for a random selection of the counties that had not responded to the first two mailouts. Each population category had its own rank order assignment. The selection of counties followed exactly the strategy set forth as to how many counties each population category needed to achieve greater than 50% return. The goals set for the telephone interviews were as follows: 1.

For counties with fewer than 25,000 persons: At least 7 additional surveys from

North Carolina and 5 additional surveys from Tennessee in this population category.

This required at least 12 total telephone survey interviews from both states.

2. *For counties with more than 25,000 persons but fewer than 50,000 persons:* At least 2 additional surveys from North Carolina and 4 additional surveys from Tennessee in this population category. This required at least 6 total telephone survey interviews from both states.

3. *For counties with more than 50,000 persons:* At least 4 additional telephone survey interviews from Tennessee needed to be completed. The North Carolina population category response rate was met with the two survey mailouts.

At least 22 telephone survey interviews needed to be completed to meet the response rate desired. A master list was created and counties were selected from both states via the random number chart. After this chart was assembled, phone numbers were obtained from county government web sites, and phone calls began. Initial contact was made with whomever answered the phone, and an interview with the county-level emergency manager was requested. If a county manager was not in the office, a message was left for him/her to contact the investigator.

When an emergency manager was available to talk, the investigator utilized a script for the telephone interview which followed exactly the survey instrumentation. The actual survey was the data collection instrument for the telephone interviews. The investigator made sure to include the required information regarding protection of human subjects and informed consent for every call. No participants declined to participate in the study for the telephone survey interview phase.

County emergency managers who responded to the scripted interview questions from the survey instrument were counted as completed returned surveys. A total of 23 survey telephone interviews were completed.

After consent was obtained, the investigator read through the first two screening questions on the first page of the survey instrument. The questions were read word for word. Of the 23 telephone survey interviews, 8 emergency managers were screened out because they were not familiar with or credentialed to teach the *Emergency Response to Terrorism: Basic Concepts* course. Fifteen emergency managers could be interviewed.

The investigator then read the questions from page 2 of the survey instrument. Several of the emergency managers needed the Likert scale question (Question 3) repeated, but all seemed to understand it. The open-end question was asked, and the response was written verbatim from the answer given by the emergency manager. At no time were any examples given to the emergency managers from the responses of others.

Page 3 of the telephone survey interview was similar to page 1. All questions were asked word for word, and at no time were any examples given to the emergency managers from other responses to the qualitative questions. The telephone interview responses were carefully written down during the interview, and all of those telephone interview responses may be found in Appendix I.

3.2.6 Total Returns

There were 104 returned surveys, which yielded a return rate of 53.6%. The return rate was augmented by interviews after the first two mail outs yielded a less than desirable

return rate of less than 45%. The distribution by state of total collected surveys is found in Table 4 on the next page.

There were 53 completed surveys and interviews from North Carolina, which represented 51.0% of the data used in the study and 51 returned surveys and interviews from Tennessee, which represented 49.0% of the potentially available data. Table 5 indicates responses by population stratification for North Carolina and Tennessee. The population stratifications as per the study design are described.

Table 4: Distribution of Responses by State (N=104)

State	Number of Responses	Percentage
Tennessee	53	51%
North Carolina	51	49%
Total	104	100%

Table 5: Distribution of Responses by Population Stratification for Both North Carolina and Tennessee (N=104)

Population Strata	Frequency	Percentage
4,000 to 24,999	35	33.70%
25,000 to 49,999	32	30.80%
50,000 to 900,000	37	35.60%
Total	104	100%

3.3 Data Analysis Procedures

Completed surveys and survey phone interviews were sorted into two notebooks, one notebook for returns from North Carolina and one notebook for returns from Tennessee.

The collected surveys and telephone interview surveys were grouped in alphabetical order by name of county and checked against a master list. This allowed for collection of demographic information without identification of the counties themselves, a provision of the Institutional Review Board application. The surveys that were completed via telephone were marked with red ink and easily separated from those returned via mail for review by the committee for confirmation of data collection if needed.

The investigator met with the University of Tennessee Office of Information Technology to configure the statistical software, *Statistical Package for the Social*

Sciences (SPSS). Data were analyzed using this statistical software package for those quantitative factors that could be evaluated.

The qualitative aspect of data analysis was initially performed by analyzing written responses for common themes. For this process, the investigator followed a procedure described by Glesne (1999) in her text, *Becoming Qualitative Researchers: An Introduction* (2nd ed.). The first task was establishing a simple coding system to identify common themes. Glesne explains this process:

coding is a progressive process of sorting and defining and defining and sorting those scraps of collected data (i.e. observation notes, interview transcripts, memos, documents, and notes from relevant literature) that are applicable to your research purpose. By putting like-minded pieces together into data clumps, you create an organizational framework. It is progressive in that you first develop, out of the data, major code clumps by which to sort the data. Then you code the contents of each major code clump, thereby breaking down the major code into numerous subcodes. Eventually, you can place the various data clumps in a meaningful sequence that contributes to the chapters or sections of your manuscript (p. 135).

At the beginning of the data collection process, all of the written responses from the collected surveys and interviews were retyped and sorted into one of the three population subgroups from the two states. Memos were created using Post-it notes to identify common themes. The analysis did not end at this point; further analysis was done using narrative analysis. Maxwell (1996) in his textbook, *Qualitative research design: An interactive approach*, describes an analytic pathway that was used in this study:

these fall into three main groups: memos, categorizing strategies (such as coding and thematic analysis), and contextualizing strategies (such as narrative analysis, individual case studies, and ethnographic

microanalysis). These methods can, and generally should, be combined (p. 78).

For this study, the contextualizing strategy used was narrative analysis. Maxwell further explains the contextualizing strategy as follows:

what all of these strategies have in common is that they do not focus primarily on relationships of similarity that can be used to sort data into categories independently of context, but instead look for relationships that connect statements and events within a context into a coherent whole (p. 79).

In this study, narrative analysis method was used in much the way that Connolly and Clandinin (1990) describe it:

perhaps because it focuses on human experience, perhaps because it is a fundamental structure of human experience, and perhaps it has a holistic quality, narrative has an important place in other disciplines. Narrative is a way of characterizing the phenomena of human experience and its study which is appropriate to many social science fields (p. 2).

After careful analysis of the written and telephone interview data, it was found that the intent to perform a qualitative analysis was not practical as there was not enough data to work with to perform this type of study in the proper manner. The respondents also did not have consensus on many items. The data, when evaluated by content analysis methods and identification of common themes were found to be of use for presenting findings and discussion in Chapters Four and Five.

3.4 Conclusions

The survey research design utilized a descriptive survey that allowed for collection of data that included frequencies and percentages as well as open-ended questions which allowed for content analysis identifying common themes. Five research questions were

foundational to the study. Two survey mailings and one telephone interview sequence allowed for a return rate of 53.6 percent. The findings of the data are described in the next chapter.

CHAPTER FOUR

FINDINGS

4.1 Introduction

The purpose of the study was to evaluate the appropriateness and sufficiency of content for the existing course developed by the National Fire Academy (NFA) the United States Department of Justice (DOJ) and Federal Emergency Management Agency (FEMA) entitled *Emergency Response to Terrorism: Basic Concepts* as perceived by county-level emergency managers in two states: North Carolina and Tennessee. This national course is taught through the Tennessee Emergency Management Agency and the North Carolina Department of Crime Control and Public Safety - Division of Emergency Management.

After completion of the survey return and telephone interview phases, 104 of 194 surveys were collected; this indicates an overall survey return rate of 53.6 percent. Fifty-three counties from North Carolina (51.0%) responded and 51 counties from Tennessee (49.0%) responded. This chapter will present data analysis for all five research questions.

4.2 Data Analysis for Research Question 1

The first of five research questions foundational to this terrorism incident response study asked the following:

How do North Carolina and Tennessee emergency managers perceive the current Department of Justice/Department of Justice/Federal Emergency Management Agency's

Emergency Response to Terrorism: Basic Concepts curriculum for public safety providers in the discipline of terrorism incident response?

This question was answered through survey question 3 found on the second page of the survey instrument (See Appendix E). Responses to survey question 3 were recorded on a 5-point Likert-type scale that addressed appropriateness of curriculum topic (content) and a five-point importance rating scale. Frequencies and percentages were obtained.

The first part of question 3 in the survey asked emergency managers to rate the appropriateness of the five course topics. A rating of (1) on the Likert-type scale provided to respondents indicated “inappropriate.” A rating of (5) indicated “appropriate.” The midpoint of the scale (3) was labeled “undecided.” Table 6 (next page) indicates the respondents’ perceptions of appropriateness of the topics.

Analysis of the data displayed in Table 6 indicates that the topic “Understanding and Recognizing Terrorism” received the largest number of “appropriate” (5) ratings (43%), followed by “Scene Control” (41.7%). The remaining three topics were perceived to be appropriate by 34.7 percent of all respondents. It is interesting to note that none of the topics received “appropriate” ratings from 50 percent or more of the respondents. However, at least 80 percent of all respondents rated each of the topics 4 or 5, on the appropriate part of the scale, with more than 94 percent awarding “Understanding and Recognizing Terrorism” one or the other of these ratings. Only one respondent rated one topic (“Incident Management Overview”) “inappropriate.”

Table 6: Perceived Appropriateness of Course Topics (N=72)

Topic	1	2	3	4	5
Understanding and Recognizing Terrorism	n=0 (0%)	n=1 (1.4%)	n=3 (4.2%)	n=37 (51.4%)	n=31 (43%)
Implementing Self-Protective Measures	n=0 (0%)	n=1 (1.4%)	n=8 (11.1%)	n=38 (52.8%)	n=25 (34.7%)
Scene Control	n=0 (0%)	n=1 (1.4%)	n=8 (11.1%)	n=33 (45.8%)	n=30 (41.7%)
Tactical Considerations	n=0 (0%)	n=1 (1.4%)	n=13 (18.1%)	n=33 (45%)	n=25 (34.7%)
Incident Management Overview	n=1 (1.4%)	n=1 (1.4%)	n=10 (13.9%)	n=35 (48.6%)	n=25 (34.7%)

Question 3 on the second page of the survey asked emergency managers to rate the importance of the five course topics. Responses were again (1) to (5), this time with a continuous, rather than a Likert-type scale, with a score of (1) labeled “Not Important” and (5) labeled “Important.” Table 7 (next page) indicates these findings.

Importance ratings of the five topics were somewhat different from their appropriateness ratings. As seen in Table 7, four of the five topics were rated as “Important”(5) by at least 55 percent of the respondents. “Scene Control” received the most “Important” (5) ratings (73%); “Tactical Considerations” received the fewest (47.3%). When considering both (4) and (5) ratings, only one topic (“Tactical Considerations”) received fewer than 90 percent. No topic received an “Unimportant” (1) rating.

Table 7: Perceived Importance of Course Topics (N=74)

Topic	1	2	3	4	5
Understanding and Recognizing Terrorism	n=0 (0%)	n=1 (1.4%)	n=3 (4.1%)	n=22 (29.7%)	n=48 (64.8%)
Implementing Self-Protective Measures	n=0 (0%)	n=1 (1.4%)	n=5 (6.7%)	n=19 (25.7%)	n=49 (66.2%)
Scene Control	n=0 (0%)	n=0 (0%)	n=5 (6.7%)	n=15 (20.3%)	n=54 (73.0%)
Tactical Considerations	n=0 (0%)	n=1 (1.4%)	n=7 (9.4%)	n=31 (41.9%)	n=35 (47.3%)
Incident Management Overview	n=0 (0%)	n=1 (1.4%)	n=5 (6.7%)	n=27 (36.5%)	n=41 (55.4%)

When considering adult learners and the examination of course topics' appropriateness and importance, two relevant features of Caffarella's (2002) list of adult education principles and practices apply. The first principle is, "Adults are not likely willing to engage in learning unless the learning is meaningful to them," and the second states, "For the most part, adults are pragmatic in their learning; they want to apply their learning to present situations" (p. 29).

The appropriateness and importance of the course topics, as the data from the respondents show, indicate respondents believe that this course will provide information which learners will be able to apply in their work settings as well as be meaningful to them. However, there was a difference noted in the appropriateness scores versus those

for importance. This finding is discussed in Chapter Five. It should also be noted that learners/trainees themselves were not survey respondents.

4.3 Data Analysis for Research Question 2

The second of five research questions foundational to this terrorism incident response study asked the following:

How are North Carolina and Tennessee emergency managers using the current curriculum in the discipline of terrorism management education?

This research question was addressed by asking the emergency managers two screening questions to find out if they could participate and provide data on the survey instrument and if the ERT: BC curriculum was utilized by the county's public safety agencies. Additionally, emergency managers were asked if there were any other strategies and/or activities used by their county in terrorism management education.

Survey instrument items one and two on page one were the initial screening questions to the emergency managers. These first two questions asked whether the emergency manager was familiar with the *ERT: BC* course and whether he or she was credentialed to teach the course. Survey Question items one and two on page two asked if the emergency managers were teaching the course and if public safety personnel in their county were taking the course.

Survey Question 10 on the third page of the instrument provided data for content analysis via an open-ended question. It asked how county-level emergency managers were using the *ERT: BC* curriculum for terrorism management education. Survey

Question 10 was essentially a fill-in-the-blank question, and common themes and key words were identified in the answers provided by the county-level emergency managers.

Tables 8, 9, 10, and 11 present the quantitative data for Research Question 2; then qualitative data from survey question 10 on the third page of the survey are presented.

Table 8 delineates by state and in total, the number of county-level emergency managers who were familiar with the DOJ/FEMA course, Emergency Response to Terrorism: Basic Concepts. This was the initial screening question for the county-level emergency manager. Nearly 80 percent (n=83) of respondents in the two states indicated that they were familiar with the course. It is noted that the percentages are similar for North Carolina and Tennessee.

Table 9 provides responses to the second of the screening questions found on the first page of the instrument. Responses indicated that 24% (n=25) of the county-level

Table 8: Emergency Manager Familiarity with Course (N=104)

State	Yes	No	Total
North Carolina	n=41 (39.4%)	n=12 (11.6%)	n=53 (51.0%)
Tennessee	n=42 (40.4%)	n=9 (8.6%)	n=51 (49.0%)
Total	n=83 (79.8%)	n=21 (20.2%)	n=104 (100.0%)

Table 9: Emergency Manager Credentialed to Teach the ERT: BC Course (N= 104)

State	Yes	No	Total
North Carolina	n=11 (10.6%)	n=42 (40.4%)	n=53 (51.0%)
Tennessee	n=14 (13.4%)	n=37 (35.6%)	n=51 (49.0%)
Total	n=25 (24.0%)	n=79 (76.0%)	n=104 (100%)

emergency managers were credentialed to teach the course, while 76% (n=79) were not.

The credentialing process requires the emergency manager to complete the entire 16-hour classroom course as well as an instructor course of approximately eight hours. One must be credentialed as an instructor in order to teach the course. The Emergency Response to Terrorism: Basic Concepts instructor credential was not an exclusionary criterion for the emergency manager to complete the survey; however, it provided useful data. Of the Tennessee respondents, 14 of 51 were credentialed to teach the course, 27.5 percent. Of the North Carolina respondents, 11 of 53 were credentialed to teach the course, 20.8 percent.

Table 10 reports findings for survey question one on the second page of the instrument and begins the process of answering the posted research questions for this study. At this point, the emergency manager has reported familiarity with the Emergency Response to Terrorism: Basic Concepts course and has elected to complete the survey or has forwarded the survey to someone in the organization who is familiar with the course, having that person return it to the investigator.

Table 10: Has the Respondent Taught the ERT: BC Course? (N= 79)

State	Yes	No	Total
North Carolina	n=8 (10.1%)	n=31 (39.3%)	n=39 (49.4%)
Tennessee	n=12 (15.2%)	n=28 (35.4%)	n=40 (50.6%)
Total	n=20 (25.3%)	n=59 (74.7%)	n=79 (100%)

Approximately 76% (n=79) of the respondents (managers, others) were able to answer this question and complete the remainder of the survey; whereas 24% of the respondents (n=25) did not answer the question or the questions following.

Of those who responded to the question regarding manager instruction (n=79), only 25.3 percent (n=20) reported that the manager had actually taught the course.

Table 11 focuses on survey question two, found on the second page of the instrument. Of the 79 respondents who answered this question, 88.6 percent (n=70) reported that public safety personnel in that county had taken the course. Obviously, this indicates that a great majority of counties reporting were using the course to train their public safety first response personnel.

Survey question 10 on the third page of the survey instrument (the qualitative question) provided the remaining data pertinent to research question two. It asked the emergency manager, “Other than the required attendance and examination for the DOJ/FEMA course mentioned above, what strategies and/or activities to ensure learning

Table 11: North Carolina and Tennessee County Public Safety Personnel Who Have Taken the *ERT: BC* Course (N= 79)

State	Yes	No	Total
North Carolina	n=31 (39.2%)	n=8 (10.1%)	n=39 (49.4%)
Tennessee	n=39 (49.4%)	n=1 (1.3%)	n=40 (50.6%)
Total	n=70 (88.6%)	n=9 (11.4%)	n=79 (100%)

has your county emergency management agency employed to respond to terrorism incidents?” The investigator added the following statement to this question, “It is understood that there are some operational security issues that each agency maintains for terrorism planning. Please address unclassified strategies and/or answer in general terms.”

In total, 58 respondents in North Carolina and Tennessee (55.8% of the initial respondent group) provided qualitative information for Question 10. Twenty-seven persons responded from North Carolina, and 31 persons responded from Tennessee.

Eighteen of the 27 North Carolina responses and 20 of the 31 Tennessee responses indicated use of strategies/activities consisting of county-sponsored terrorism exercises/drills and additional local terrorism incident response training. Other strategies/activities listed by the respondents included: NIMS training, news releases, coordination between departments, obtaining political support, and creation of a hazardous materials team.

Common themes and key words from both states were found by the investigator during the content analysis for survey question 10. These themes and key words were:

1. Classes
2. Courses
3. Exercises
4. Drills
5. Training
6. Education

The majority of the additional local terrorism response training done by both states to augment the Emergency Response to Terrorism: Basic Concepts course involved components of the National Incident Management System and the Incident Command System. This instruction consists of four courses and focuses upon the standardized incident management concepts that public safety agencies across the United States use.

These four courses are:

1. IS-100 – Introduction to the Incident Command System
2. IS-200 – Basic Incident Command Systems
3. IS-700 – National Incident Management Systems: An Introduction
4. IS-800 – National Response Framework: An Introduction

Each of the four courses listed above may be taken either in the traditional classroom setting or by computer-based instruction, similar to the computer-based instruction available for the *Emergency Response to Terrorism: Basic Concepts* course.

The computer-based instruction is found on the Federal Emergency Management

Agency's Independent Study web site. At the time of this study, FEMA had approximately 76 emergency management-related courses that could be accessed through the Internet. Many of those included an interactive computer-based instruction modality. All courses have an electronically formatted final examination with multiple choice questions. These computer-based independent study courses may be accessed through the FEMA web site at: <http://training.fema.gov/IS/crslist.asp>.

4.3 Data Analysis for Research Question 3

The third of five research questions foundational to this terrorism incident response study asked the following:

Do North Carolina and Tennessee emergency managers believe that the current curriculum should be modified for public safety personnel use in these two states, and if so, how?

This research question was answered primarily by responses to two open-ended questions concerning additional topics for inclusion in the curriculum and any other additional comments about the pre-existing curriculum. Survey Question four found on the second page of the instrument, and survey question eight found on the third page required respondents to fill in blanks. Common themes and key words were identified in the answers provided by the county-level emergency managers or other respondents.

Survey Question four on the second page of the survey instrument asked the emergency manager, "Based on your training and experience, what, if any, additional topics should be included in terrorism response education for the public safety provider?"

In total, 36 counties in North Carolina and Tennessee (34.6% of the initial respondent group) provided responses to survey question four. Eighteen persons responded from North Carolina and 18 persons responded from Tennessee.

Of the 36 total responses from North Carolina for survey question four, 16 did not provide any information as the answer areas were left blank. Two responses indicated no additional topics were needed. The remaining 18 responses provided qualitative data that required analysis. Fourteen of those 18 responses indicated that the county wanted more information in one area or another of terrorism management or mitigation; however, there was very little agreement among the North Carolina respondents.

Of the 38 total responses from Tennessee for survey question four, 15 respondents did not provide any information as the answer areas were left blank. Five respondents indicated that no additional course topics were needed. Eighteen of the responses provided qualitative data that required analysis. Twelve of the 18 responses indicated that the county wanted more information in one area or another of terrorism management or mitigation; however, there was very little agreement among the Tennessee respondents. There were no common themes or key words found by the author for this survey question.

Survey Question eight asked the respondents for any other comments they wished to make about the Emergency Response to Terrorism: Basic Concepts course. In total, 15 counties in North Carolina and Tennessee (14.4% of the initial respondent group) provided responses for survey question 8. Six persons responded from North Carolina and nine persons responded from Tennessee.

Of the 36 total responses from North Carolina for survey question eight, twenty-five did not provide any information as the answer areas were left blank. Five responses indicated no additional comments. Six of the responses required analysis. Of the comments in the six responses, no agreement was found.

Of the 38 total responses from Tennessee for survey question eight, seventeen did not provide any information as the answer areas were left blank. Twelve responses indicated no additional comments. Nine of the responses provided qualitative data that required analysis. Of the comments in the nine responses, no agreement was found. No specific common themes or key words were found by the investigator in the data provided by the survey instrumentation for survey question eight.

Overall, the emergency managers had opinions as to curriculum modification for the *ERT: BC* course, however, there were not many responses, and those responses had no clear direction when evaluating the data for common themes and key words. Appendix I provides the verbatim responses to these open-ended questions.

4.5 Data Analysis for Research Question 4

The fourth of five research questions foundational to this terrorism incident response study asked the following:

Based on the responses of North Carolina and Tennessee emergency managers and previous research, how should the current curriculum be modified?

This question was answered through triangulation of data from survey

respondents and review of the literature concerning terrorism incident response education. Survey questions four and eight were reviewed for common themes and key words. It is noted that these same two questions contributed to research question 3. Comparisons were made as to county population and perceived threat level of terrorism event, survey question 11.

There was no agreement found among the respondents as to any curriculum content changes. Additionally, there was no trend and/or agreement found with population and threat level of terrorism and curriculum modification for this question. It made no difference whether a county's population was large or small, or if a county's perceived threat of terrorism event was high or low; neither of these variables affected recommendations as to curriculum modification.

One text reviewed, (IOM, 2007) indicated "very little funding has been directed to strengthening the nation's trauma care system or its capacity to respond to terrorism involving conventional weapons" (p. 193). This suggests that all current research on terrorism events revealed the use of explosives and ballistics as a primary terrorist tactic. Two of the respondents addressed the use of explosives and/or ballistics in their qualitative responses.

Survey question 11, "What do you consider your county's threat level (probability) for terrorism?" data are found in Table 12. The total number of respondents equaled 74% (n=77) of the initial group.

Of those who responded to this question (n=77), 7.8 percent (n=6) stated that their threat level for terrorism was significant, 37.7 percent (n=29) stated that their threat level

Table 12: Respondent's Evaluation of County Threat Level for Terrorism (N= 78)

State	Minimal	Moderate	Significant	Total
North Carolina	n=20 (52.6%)	n=14 (36.9%)	n=4 (10.5%)	n=38 (49.4%)
Tennessee	n=22 (56.4%)	n=15 (38.5%)	n=2 (5.1%)	n=39 (50.6%)
Total	n=42 (54.5%)	n=29 (37.7%)	n=6 (7.8%)	n=77 (100.0%)

for terrorism was moderate, and 54.5 percent (n=42) stated that their county's threat level for terrorism was minimal. It is noted that one respondent declined to answer the question to maintain operational security and confidentiality. It is not known whether the respondents consider the variable of threat level probability for terrorism event to be a major concern for their locale. This is added as a limitation of the study in Chapter 1.

4.6 Data Analysis for Research Question 5

The fifth of five research questions foundational to this terrorism incident response study asked the following:

To what extent are the curriculum and curriculum delivery methods currently in use in terrorism event response by public safety first responders consistent with the research on adult learning and learners?

Adult learners are the primary audience for the course, *Emergency Response to Terrorism: Basic Concepts*. Because the course is delivered in two different modalities, traditional classroom instruction and web-based computer program, it was important to explore the characteristics of adult learners and the two main delivery methods of this course.

Information pertinent to this research question emerged from responses to four survey questions on the third page of the survey, questions five, six, seven, and nine. Responses to survey questions 5, 6, and 9 are presented in Tables 13, 14, and 15. Survey Question 7 is presented separately.

These survey questions asked about preferred method of course delivery (either by traditional classroom method or computer-based instruction), most effective method of course delivery, why respondents thought their preferred method was more effective, and whether or not public safety providers in their county sought out courses or training to better enable them to manage terrorism incidents. Additionally, the respondents were asked whether public safety personnel in their county sought out courses or materials to better enable them to respond to terrorism incidents.

Table 13 provides the data for survey question 5 asking about the preferred method of *ERT: BC* course delivery. There were 78 responses to this question, and 26 non-respondents. Of those emergency managers or designees who responded, 78.2% (n=61) stated that the traditional two-day classroom teaching format was preferred, while 21.8% (n=17) supported the web-based computer course.

Table 13: County Respondent Preferred Method of Course Delivery (N= 78)

State	Classroom	Computer	Total
North Carolina	n=29 (37.2%)	n=9 (11.5%)	n=38 (48.7%)
Tennessee	n=32 (41.0%)	n=8 (10.3%)	n=40 (51.3%)
Total	n=61 (78.2%)	n=17 (21.8%)	n=78 (100%)

Table 14 indicates the data from survey question 6 asking the county representatives about the most effective manner of ERT: BC course delivery. The total number of respondents equaled 77.

Of those emergency managers who responded, 83.1% (n=64) stated that the traditional two-day classroom teaching format was the most effective method of course delivery, while 16.9% (n=17) indicated that the web-based computer course was more effective. It is important to note here that the respondents may have been reporting their preferences and may not have been actually teaching the course. It should also be noted that respondents were not those taking the course, but those managing or teaching the course.

Survey question seven was an open-ended question (fill-in-the-blank). Common themes were identified in the answers provided by the respondent. Existing theory and research in adult education also contributed to answering this research question,

Table 14: County Respondent Perceived Most Effective Method of Course Delivery
(N= 77)

State	Classroom	Computer	Total
North Carolina	n=31 (40.3%)	n=6 (7.8%)	n=37 (48.1%)
Tennessee	n=33 (42.8%)	n=7 (9.1%)	n=40 (51.9%)
Total	n=64 (83.1%)	n=13 (16.9%)	n=77 (100%)

particularly the literature on learner motivation and experiential learning.

Survey question seven asked: “For your answer in question six, why do you think that method is more effective?” Survey question six asked for the preferred method of *Emergency Response to Terrorism; Basic Concepts* course delivery.

In total, 74 respondents in North Carolina and Tennessee provided responses to Question 7. Thirty-six persons responded from North Carolina, and 38 persons responded from Tennessee.

Twenty-three of the 36 North Carolina responses indicated that their county favored the traditional classroom format for the *Emergency Response to Terrorism: Basic Concepts* course due to class interaction, drawing from others’ experiences, and the ability to share ideas and communicate with one another.

Twenty-two of the 38 Tennessee responses indicated that their county favored the traditional classroom format for the *Emergency Response to Terrorism: Basic Concepts*

course due to class interaction, drawing from others' experiences, and the ability to share ideas and communicate with one another.

Other responses listed for this question included offering opinions as to why the computer-based course was better for their particular county, (e.g. the computer is more easily accessed, it is easier to schedule classes, convenience, no compensation to take the computer course, and lack of personnel resources to send to traditional classroom settings).

Common themes and key words from both states were found by the investigator during the qualitative analysis for question seven, these themes and key words were:

1. Interactions
2. Experience
3. Networking
4. Discussion
5. Experiential
6. Discourse
7. Idea exchange
8. Class thought and discussion to flow freely
9. Feedback
10. Learning from each other
11. Hands-on training with other people (brought about by the group activities) allowing for interaction

When considering applications of adult learning principles and practices, Caffarella (2002) again provides three criteria to consider when discussing course delivery methods. She writes, “[A]dults prefer to be actively involved in the learning process rather than passive recipients of knowledge, adults learn in interdependent, connected, and collaborative ways as well as independent, self-reliant modes,” and “adults are more receptive to the learning process in situations that are both physically and psychologically comfortable” (p. 29). These three principles may help to explain the two different perspectives on the *ERT: BC* course delivery preference of public safety personnel.

Table 15 summarizes the data from survey question 9 on the third page of the instrument. The total number of respondents to this question was 78. Survey Question 9 specifically addressed the issue of the respondent’s perception of learner motivation in the context of her/his county’s public safety personnel. Of those persons who responded, 78.2% (n=61) stated that their public safety personnel searched out courses to better enable them to respond to terrorism incidents, while 21.8% (n=17) did not.

When considering the principles of adult education related to motivation, Leamson (1999) suggests, “to become motivated to learn, the one thing that a student must experience is a need to learn – feel a desire to know” (p. 74). It is not known what motivates public safety personnel to seek out practice-related courses. However, it is known that all three public safety professions have compulsory continuing education

Table 15: Public Safety Motivation to Search for Terrorism-Related Courses**(N= 78)**

State	Yes	No	Total
North Carolina	n=32 (41.0%)	n=6 (7.7%)	n=38 (48.7%)
Tennessee	n=29 (37.2%)	n=11 (14.1%)	n=40 (51.3%)
Total	n=61 (78.2%)	n=17 (21.8%)	n=78 (100%)

requirements for maintenance of certification/licensure. Houle (1961) offers one of three learning orientations that may fit the public safety professions; goal-oriented learners. These are learners who “use education as a means of accomplishing fairly clear-cut objectives” (p. 15).

Responses to survey questions 4, 7, 8, and 10 were typed verbatim, separated by state, and are presented in Appendix I. Common themes and comments were found and were established via content analysis as described previously. Again, it should be kept in mind that survey respondents were those who managed or taught the course, not those who took the course.

4.7 Comparisons of Groups

Comparisons of groups were accomplished by investigating various population categories identified in the survey instrument; they are included as additional data analysis since the

research questions did not specifically target these comparisons, and the data did not indicate that comparisons would be statistically significant. However, these comparisons enrich the study and suggest areas for future research.

In total, there were three categorical comparisons of responses by size of county made by the investigator: county ERT: BC course delivery preference (survey question 5 on page 3), perceived public safety motivation to seek out terrorism response courses (survey question 9 on page 3), and perceived county threat level probability for a terrorism incident (survey question 11 on page 3). Additionally, comparisons of perceived threat level probability and ERT: BC course delivery preference and perceived threat level probability as well as perceived public safety learner motivation were made. The five comparisons are as follows:

1. County population and perceived threat level probability for a terrorism incident.

The data indicated that emergency managers for both states with populations greater than 50,000 persons thought that their terrorism threat level was high versus those counties with a population of less than 50,000 persons. This was expected, as larger populations carry greater risk for a terrorism incident (i.e. Loudon, Tennessee population versus Charlotte, North Carolina population as per the U.S. Census Bureau data from 2000). No respondents with populations ranging from 4,000 to 49,999 perceived a significant threat level for terrorism. This is indicated by Table 16.

Table 16: County Population and Perceived Threat Level for Terrorism (N=77)

County Population	Minimal (<10%)	Moderate (10-49%)	Significant (50-100%)	Total
4,000 to 24,999	15	7	0	22
25,000 to 49,999	16	8	0	24
50,000 to 900,000	11	14	6	31
Total	42	29	6	77

2. County population and Emergency Response to Terrorism: Basic Concepts course delivery preference.

The data indicated that there was no trend as to county population and *ERT: BC* course delivery preference. This issue is discussed further in the next chapter.

3. County population and perceived public safety learner motivation by the respondents.

The data indicated that respondents for both states with populations greater than 25,000 persons thought that public safety providers sought out courses to better enable them to respond to terrorism incidents versus those counties with 4,000 to 24,999 persons. In the counties with populations of 4,000 to 24,999, the respondents indicated that 43.8 percent of their public safety personnel do not seek out courses to better enable

Table 17: County Population and Public Safety Personnel Seeking Terrorism Incident Response Courses (N=78)

County Population	Yes	No	Total
4,000-24,999	13	10	23
25,000-49,999	19	5	24
50,000-900,000	29	2	31
Total	61	17	78

them to respond to terrorism incidents. These data parallel the perceived threat level data provided earlier which indicate the larger the population, the more perception of threat level of terrorism. These data are presented in Table 17.

4. Perceived threat level probability and Emergency Response to Terrorism:

Basic Concepts course delivery preference.

The data indicated that there was no trend as to the county-level emergency manager's perceived terrorism threat level probability and *ERT: BC* course delivery preference.

This issue is described further in the next chapter.

5. Perceived threat level probability and perceived public safety learner motivation by the respondent.

The data indicated that there was no trend as to the respondent's perceived terrorism threat level probability and perceived public safety learner motivation.

4.8 Summary of Findings

This chapter provided respondent data that indicated the *ERT: BC* course was considered appropriate and the curriculum content important as evidenced in the discussion for research question one. However, there were slight differences in the appropriateness scores and importance scores.

Responses to research question two indicated that most of the respondents were familiar with the course, but most were not credentialed to teach it. Most of the respondents had not taught the course. The majority of the respondents indicated that public safety personnel in their county had taken the course. Respondents indicated that they were using training and disaster exercises to augment the *ERT: BC* course.

Research question three did not provide enough data to answer the question of curriculum modification for the *ERT: BC* course. The data provided from the respondents were collected from compiling written responses and searching for common themes and key words. There were few responses for this question, and for the respondents who did answer this question, there was very little agreement as to any curriculum content items.

Responses to research question 4 did not provide enough data to answer the question of curriculum modification based upon the answers provided from the respondents; however, there was one literature review item related to previous research that indicated a shortcoming with respect to explosives and ballistics healthcare capability, mostly related to funding trauma care systems.

Responses to research question 5 indicated that the respondents' preferred method of course delivery was the traditional classroom method and that this method was the

most effective. The respondents also indicated that most public safety personnel sought out courses to better enable them to respond to terrorism incidents. Most respondents indicated that their threat level probability for a terrorism incident was minimal. Some comparisons of groups were completed and indicated that there was some correlation of size of county population and threat level probability for terrorism as well as respondents indicating that with populations greater than 25,000 persons, public safety personnel were more likely to seek out terrorism incident response courses. Lastly, the respondents indicated that the experiential learning component of the *ERT: BC* course was of benefit.

CHAPTER FIVE

CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the restatement of the purpose of the study, the sample and procedure, conclusions of the study, a discussion of certain findings, and recommendations for additional research. The purpose of the study was evaluation of the course developed by the National Fire Academy, United States Department of Justice, and Federal Emergency Management Agency entitled *Emergency Response to Terrorism: Basic Concepts* by county-level emergency managers or their departmental designees.

5.2 Population

The study population included 194 county-level emergency managers or their designees from North Carolina and Tennessee. A survey instrument was developed and mailed twice, with a less than optimal return. A telephone interview process brought the return rate to an acceptable level to provide generalizations of data, greater than 50 percent (participants); this was the third phase of the survey process. The final return rate after all three phases of the survey process was 53.6 percent, 104 out of 194 counties responding.

5.3 Conclusions

Conclusions of the study are organized by each of the five foundational research questions. They are as follows:

1. How do North Carolina and Tennessee emergency managers perceive the current Department of Justice/Federal Emergency Management Agency's Emergency Response to Terrorism: Basic Concepts curriculum for public safety providers in the discipline of terrorism incident response?

Respondents in both North Carolina and Tennessee generally perceived the content of the course to be appropriate. However, larger percentages of respondents rated each of the five topics "Somewhat Appropriate" (4).

Additionally, emergency managers or their designees, perceived the content of the course (five topics) to be important. More than half the respondents rated four of the five topics "Important" (the highest level of the scale) and 88 percent or more rated all five topics either the highest or the next highest level of importance.

2. How are North Carolina and Tennessee emergency managers using the current curriculum in the discipline of terrorism incident response education?

The majority of emergency managers in North Carolina and Tennessee are familiar with Emergency Response to Terrorism: Basic Concepts. However, most are not credentialed to teach the course. The majority of the respondents indicated that public safety personnel in their county have taken the course.

Respondents in both North Carolina and Tennessee are using the course as an entry-level modality to educate their public safety first response personnel. They also

indicated that their terrorism response endeavors, such as additional training and exercises augmented the ERT: BC course. The respondents in both states indicated that they augment their terrorism preparedness efforts by emphasizing additional courses related to disaster management and terrorism incident response, such as the National Incident Management System curriculum.

3. Do North Carolina and Tennessee emergency managers believe that the current curriculum should be modified for public safety personnel for use in these two states, and if so, how?

While some North Carolina and Tennessee emergency managers indicated their thoughts on modification of the current *Emergency Response to Terrorism: Basic Concepts* curriculum, no agreement regarding modifications was found in their comments.

4. Based on the responses of North Carolina and Tennessee emergency managers and previous research, how should the current curriculum be modified?

Recommendations for modification of current curriculum were not forthcoming from the responses of the North Carolina or Tennessee emergency managers or their designees and previous research. Some North Carolina and Tennessee respondents suggested modifications to the current *Emergency Response to Terrorism: Basic Concepts* curriculum, but no agreement was found in their suggestions. No previous research in the area of terrorism incident response was found by the investigator for any of the three public safety professions.

5. *To what extent are the curriculum and curriculum delivery methods currently in use in terrorism event response by public safety first responders consistent with the research on adult learning and learners?*

The majority of respondents in North Carolina and Tennessee preferred the traditional classroom delivery method of *Emergency Response to Terrorism: Basic Concepts* to the computer-based instruction method. They also believed that the traditional classroom course delivery method was more effective than the computer-based instruction method. The respondents indicated that the collective experience of the public safety providers and the interaction of the class made for a more synergistic learning environment. Also, the majority of emergency managers felt that public safety personnel in their county sought out courses to better enable them to respond to terrorism incidents. This finding deals with learner motivation.

The ERT: BC curriculum and the delivery methods are consistent with certain principles and findings of adult education research, i.e. Caffarella (2002) who indicated that adults “*are motivated to learn based on a combination of complex internal and external forces*” (p. 29), and Houle (1961) who described the goal-oriented learner as “*those who use education as a means of accomplishing fairly clear-cut objectives*” (p. 15).

5.4 Discussion

This study contributes to the knowledge base of public safety education at this time, as it is the only study of its type investigating terrorism incident response education.

It was found that there has not been systematic review and/or revision of the ERT: BC course. No course curriculum modifications have been made at the date of this particular study. Additionally, at the date of this study, no significant domestic and/or international terrorism events after September 11, 2001 have occurred in the country. Because of this, the original course content is still being taught. Some examples of the respondents' thoughts on modification of the curriculum included: prevention, crowd control, Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) agents, hazardous materials PPE, and leadership-related professional development.

With respect to the findings for research question two, survey question 10 asked, *“Other than the required attendance and examination, for the DOJ/FEMA course listed above, what strategies and/or activities to ensure learning has your county emergency management agency employed to respond to terrorism incidents?”* It was found that nearly 56 percent of respondents stated that they did have strategies/activities in place to ensure this type of learning. It is not known if the other 44 percent have any type of strategies or activities in this area. This finding may also indicate that there may need to be some modifications to the current course, even though there was no agreement among the respondents on this issue in response to research question three which asked about any modifications that the respondents thought needed to be made to the ERT: BC course.

With respect to the findings of research question five, which asked about the extent of the curriculum and curriculum delivery methods currently in use by public safety first responders consistent with the research on adult learning and learners, ideas

proposed by Knox (1988) may be of value as this study on ERT: BC as it is the only study of its type. Additionally, when considering this study's findings regarding the terrorism incident response classroom learning environment being of value to most of the respondents, it was found that ideas proposed by Knox (1988), e.g., emphasis on active learning, may have some associations. Knox wants the educator to:

clarify objectives, and try to increase communication and commitment among participants and others who have stakes in the educational outcome. Such arrangements help participants:

- 1) Become aware of situations where proficiencies are used
- 2) Relate learning activities to probable applications
- 3) Practice active learning and planning for implementation in actual or simulated settings
- 4) Receive reinforcement, which is especially important during the early stages of implementation (p. 59).

All four of Knox's (1988) ideas about active learning are of benefit in the public safety practice environment and may have applications for many facets of public safety instruction, not just terrorism incident response. In particular, utilizing proficiencies, application of learning activities, and practice implementations are all emphasized in the ERT: BC course. The respondents to the study did address the issue of reinforcement by having the locally-held exercises and drills augment the ERT: BC course.

When considering that there has been neither previous evaluation nor curriculum modification of the ERT: BC course, ideas proposed by Knox (1988) advocating evaluation and reinforcement for improvement of what learners have acquired could be of value. He states,

Evaluation helps measure the degree of improvement in application and assesses how well the learner is achieving the established goals. Effective reinforcement includes substantive feedback, time to practice new

learning, and access to periodic evaluation findings. To reinforce continued application after the training program, trainers should:

- 1) Provide a timely follow-up evaluation
- 2) Periodically send additional brief readings or suggestions for further learning activities
- 3) Set up simulated practices of application strategies and offer feedback on performance as it related to the agreed-upon standards
- 4) Request that progress reports be sent to trainers and others who care about the ongoing outcome of training
- 5) Encourage persistence in implementation plans with incentives and recognition (p. 59).

Knox's (1988) thoughts about evaluation and reinforcement are noteworthy as there exist very few studies in the area of evaluation of terrorism incident response curriculum for public safety personnel. Additionally, there are no specific follow-up courses or mandated refresher courses to the ERT: BC course which might maintain proficiency for these providers.

In general discussion of findings not related to the five stated research questions foundational to the study, it was found that size of jurisdiction and preparedness level are consistent with the findings of the Rand Corporation (2004) study involving law enforcement. The larger the jurisdiction, the more improved was their preparedness level. Preparedness level correlates with training level as one cannot be prepared unless personnel are trained in preparedness/response methods. The Rand Corporation study (2004) findings applied to populations greater than 50,000 persons. This particular study finding would indicate a greater concern of terrorism threat in the larger jurisdictions.

Rand (2004) also found that local law enforcement agencies gave varied responses when asked about training for terrorism incidents, especially as to who may be offering such training. This was also found in the ERT: BC study as varied responses

were collected from respondents regarding curriculum modification. In a related finding to population, the ERT: BC study indicated that in county populations of 25,000 persons or greater, the respondents indicated that public safety personnel sought out courses that better enabled them to respond to terrorism incidents. Additionally, the ERT: BC study revealed respondents with county populations of greater than 50,000 persons indicated that their threat level probability was higher than that of county populations of less than 50,000 persons. Both of the latter finding might also indicate a greater concern of terrorism threat in the larger jurisdictions.

Plaughter (2001) also pointed out that training that is locally provided is the most effective. All training for the Emergency Response to Terrorism: Basic Concepts course was locally provided in North Carolina and Tennessee, and it was found that the county-level emergency management drills and exercises augmented the ERT: BC course.

When considering the trepidation of the public safety and civilian population of the United States with regard to terrorism; perhaps Jerold Apps (1996) was the most succinct regarding how public safety agencies view the terrorism threats for the future when he said,

in many ways the thunderstorm is a metaphor for the kind of world we are experiencing. We can hear the thunder and see the lightning, but each storm is different from what we have previously experienced. And the storms seem closer together; they seem unrelenting, never stopping. These storms in our lives, and in the lives of our organizations and institutions, tear at us, challenge us, humble us, and befuddle us. Just when we think we have things figured out, they change again, not unlike a thunderstorm that is at the same time familiar and a mystery. Our old ways of learning, where we studied the past so we could face the future, are not sufficient in these challenging times. Likewise, our current ways of teaching with their often narrowly defined roles for teachers, will not suffice in this age of mystery and unexpected events (Apps, 1996, p. 1-2).

This excerpt by Apps may be tied to two important findings of this study. First, there is no previous research in this area. There exists no foundation by which to gauge the perceptions of emergency managers and this new threat of terrorism for our public safety providers. Second, there is only one national course for terrorism incident response for the entry-level provider and only several locally offered courses, such as the University of Miami terrorism course. Additionally, in the previous excerpt, Apps (1996) wrote about the field of adult education and education psychology; he probably did not intend that his thoughtful insights might contribute to the biggest challenge to our public safety responders to date.

Welton (1991) indicates what this author considers to be a critical trait of the adult educator involved in the instruction of the public safety professions, especially as related to terrorism response education when he states that “we need to acknowledge that the educative workplace model presses beyond individual-centered approaches to the education and training of employees- that is, the adult educator’s task is to promote self-directed learning or critical thinking in its employees” (p. 35). This is important to the practice of public safety personnel as they practice without a safety net, having to think critically in a dynamic environment without the time to consult other resources. This is especially evident in the terrorism incident response environment.

A finding of this study for research question five indicated the value and worth of the experiential learning environment and adult learning characteristics. Fenwick (2003), Caffarella (2002), Houle (1961), and Knowles (1999) have emphasized the value of experiential learning in the education of adults.

Findings of this study regarding the process of experiential learning fit two of Fenwick's (2003) theoretical bases of experiential learning. Two of her contrasting explanations of experiential learning fit the area of public safety personnel education.

First, she describes the "constructivist conception of experiential learning, based on a belief that individuals construct personal knowledge by mentally reflecting on concrete experience" (p. 21). In all aspects of public safety, the singular practitioner with experience is valued. In all three public safety professions, a single practitioner may be faced with a situation that she/he must handle with the aid of their own concrete experiences for that particular problem. The exigent events that must be managed by EMS, the fire service, and law enforcement are varied, and the practitioner must be able to think critically, problem-solve, make decisions, and act on those decisions. Over time, the public safety practitioner gains greater competence and confidence in his/her skills. These abilities and competencies for the public safety provider come only from experience. Entry-level public safety providers are not able to practice in as efficiently in their dynamic environment, as they have not had the experiences to apply to practice. All of the public safety professions know this, and all have some type of comprehensive probationary process for new personnel.

Second, Fenwick (2003) describes four alternative conceptions of experiential learning that challenge the constructivist viewpoint. She explains an alternative that "conceptualizes learning as participating in a community of practice, based on a situative theory of learning. In contrast to constructivism, this perspective believes knowledge is not developed in individual's minds through reflection, but in groups through their

interactions” (p. 21). As a whole, public safety providers operate in a community of practice. They must interact in order to get the job done. Terrorism is a new problem for public safety providers in the United States. When one thinks about the Oklahoma City bombing, the Washington Beltway sniper situation, and the acts of 11 September 2001; public safety personnel had to deal with new acts against the citizenry and learn quickly how to adapt, analyze, and act.

Caffarella (2002) indicates that adults “are motivated to learn based on a combination of complex internal and external forces” (p. 29). First responder and civilian/patient safety provide examples of two of those forces. Most first responders want to be competent, efficient practitioners. They also want to be safe from harm.

Houle (1961) offered several ideas about “the purposes and values of continuing education” (p. 15) in his text, *The Inquiring Mind*. He describes three types of adult learners: goal-oriented, activity-oriented, and learning-oriented. Of the three groups, the public safety provider might fit best the description of the goal-oriented learner. He describes the goal-oriented learner as “those who use education as a means of accomplishing fairly clear-cut objectives (p. 15). This definition would seem to fit the public safety provider who seeks training in order to respond to terrorism incidents. It does not fit Houle’s definition of an activity-oriented learner who will “find in the circumstances of the learning a meaning which has no necessary connection, and often no connection at all, with the content or the announced purposes of the activity” (p. 16). The learning-oriented group definition provided by Houle may fit some public safety providers in the context of terrorism incident response education as they may “seek

knowledge for its own sake” (p. 16). However, it is unlikely that the majority of public safety providers fit into this category.

It is apparent that the findings of this study are consistent with what we know about adult learning and learners. In review of Caffarella’s list of ten accepted principles and practices of adult education, (found on pages 61 and 62 of this study), it is apparent that public safety personnel fit those criteria.

Lastly, nearly 30 years ago, Malcolm Knowles said, “appreciating and taking into consideration the prior knowledge and experience of learners has become a basic assumption of our practice as educators of adults, wherever this knowledge was learned” (Merriam, Caffarella, 1999, p. 25). This statement would seem to fit well into design of instruction for public safety personnel who have field experience.

To date no studies exist in terrorism incident response education for the ERT: BC course, it is possible that the education, experience, and resources of the various county-level emergency managers in North Carolina and Tennessee may have been varied. Additionally, some of the emergency managers or their respondents may have not wanted to release information about their county terrorism-specific operations for fear of loss of operational security. This might be why some open-ended questions may have been left blank.

5.5 Recommendations for Future Research

The investigator’s experience in and findings from this study suggest the following recommendations for future research:

- 1) This study needs to be replicated in other areas of the United States in order to obtain data from areas other than North Carolina and Tennessee. These two states may not be representative of other parts of the country.
- 2) Modification of the survey instrument for future studies needs to be completed. Some improvement of the questions would be helpful. For example, survey question eight is redundant with survey question four. Survey question nine regarding learner motivation could be expanded.
- 3) Studies like this one need to be done in areas of the country that have had terrorism incidents, such as: Atlanta, Georgia, Birmingham, Alabama, New York City, and/or Washington, D.C.
- 4) Respondents in this study were in leadership positions in emergency management and not “on-the-ground” public safety personnel who were course takers. Replication of this study with actual responders would be beneficial. They may or may not agree with those in leadership positions.
- 5) The majority of county-level respondents believed that the traditional classroom setting is the optimal educational environment for the ERT: BC course to be taught. They mentioned that this approach improved interaction, communication, and summation of shared experiences that the classroom environment brings with it. To date, there are no studies that examine extensively public safety personnel educational delivery preferences. Not all people will find the traditional classroom method as desirable or as time-efficient as the computer-based web course currently offered. This certainly

warrants additional studies of technology-based delivery versus classroom delivery modalities.

- 6) In relation to the different course delivery modalities for ERT: BC, it may be of some value to evaluate participant's scores on the final examinations to find differences to support effectiveness of one approach versus another. The final examinations for both course delivery modalities are essentially tests of content knowledge.
- 7) The use of computer-based instructional modalities and public safety providers' comfort-level with this type of instruction has not been studied. This type of study may be of value for future course development in all three public safety professions.
- 8) To date, no studies exist examining the value of experiential learning and public safety personnel courses. It is noted that experience in the public safety professions is one variable that contributes to job success and proficiency. This type of study might examine how experiential learning is brought into a course session and how it is fostered to enhance the overall course experience.
- 9) Learner motivation in the context of public safety education has not been studied. It would be of value to find out what motivates this group of adult learners to seek out courses for their particular practice. It may be interesting to find out if there are any differences between the three public safety professions with respect to learner motivation.

10) Studies in self-directed learning specific to the three public safety professions need to be conducted as none exist at this time. It would be valuable to know what self-directed educational activities public safety personnel participate in, collect those data, and bring self-directed learning practice further into the workplace environment.

11) Of the three public safety professions, only the field of emergency medical services has some guidance with regard to in-service training requirements.

The recent Institute of Medicine report (2007), *Emergency Medical Services at the Crossroads*, recommends:

that professional training, continuing education, and credentialing and certification programs for all the relevant professional categories of emergency services personnel incorporate disaster preparedness into their curricula and require the maintenance of competency in these skills' (IOM, p. 200).

At this point, neither North Carolina nor Tennessee requires any type of certification/credentialing of personnel in any aspect of disaster preparedness.

Perhaps some type of credentialing in this area may be of benefit for the public safety professions. The credentialing processes for all three public safety professions require some type of continuing education process.

Perhaps a study of the need to include credentialing in disaster preparedness/terrorism response utilizing continuing education should be conducted.

12) A qualitative study utilizing interviews of personnel who have been through terrorism incidents and have response experience in these situations would

contribute to the experiential learning of public safety personnel. It would also be interesting to find out if any of those public safety providers had the ERT: BC course prior to responding to the terrorism incident.

5.6 A Final Note

It was entirely appropriate that Jerold Apps' text was entitled, Teaching From the Heart. That is essentially what public safety instructors practice in the public safety professions do. Their concern is taking care of folks, no matter who they are, where they are from, or what their circumstances may be. Like those invested in K-12 or higher education, no one in public safety becomes rich or goes into the profession thinking they will receive constant reinforcement for what they do. Teachers, of any age group, have very similar circumstances. People who instruct public safety providers do so because they love what they do.

Part of Chapter 7 of Apps text (1996) dealt with "Learning During Crisis" (p. 78-79). He provided three principles given to him by his father. This list goes to the core of the public safety professions:

- 1) When you work, work hard and do the best job you are capable of doing. When you work for someone else, always do more than is asked. Come to work earlier than required and stay a little later.
- 2) Exchange work with a neighbor, but don't worry about exchanging money. If your neighbor helps you for a half day, expect to help him for a half day. It doesn't matter what the task. Don't worry if you believe a half day of chopping wood is worth more than a half day of shocking grain. In the end it will all work out, and you will continue to have good neighbors.
- 3) Always be available to help others, especially if they are your neighbors. Try to do more for others than they do for you" (p. 79).

Apps recalled these principles after his father passed away at the age of 93, and

relates what it means to me to teach from the heart when he said, “To teach from the heart means facing a crisis and attempting to learn from it. Most of us do not plan for a crisis. Crises sneak up on us, like fog in the valley on a clear summer night” (p. 78). That nearly says it all.

When it comes to teaching our public safety personnel to respond to terrorism events, this passage quoted from the Apps text by L. Robert Keck (1992) speaks directly to the issue: “When we face a crisis, do we focus only on the danger, and circle the wagons, or do we recognize and take advantage of the opportunities, no matter how dangerous they may be? Crises, and the transitional times they provide, present us with both danger and opportunities” (p. 79).

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APPENDICES

Appendix A

Emergency Response to Terrorism: Basic Concepts – Course Agenda

Day 1

0800	Module 0:	Welcome and Introduction
0850	Break	
0900	Module 1:	Understanding and Recognizing Terrorism - Sections I - V
0950	Activity 1.1 and Module Summary	
1120	Break	
1130	Module 2:	Implementing Self-Protective Measures – Sections I – V
1200	Lunch	
1300	Activity 2.1	
1330	Module 2:	Sections VI - VIII
1350	Activity 2.2 and Module Summary	
1420	Break	
1430	Module 3:	Scene Control – Sections I - III
1515	Break	
1525	Activity 3.1	
1555	Module 3:	Sections IV - VI
1625	Activity 3.2 and Module Summary	
1700	Adjourn	

Day 2

0800	Module 4:	Tactical Considerations – Sections I and II
0855	Activity 4.1	
0915	Break	
0925	Module 4:	Sections III and IV
1005	Module 4:	Section V
1100	Break	
1110	Activity 4.2	
1200	Lunch	
1300	Module 4:	Sections VI and VII
1400	Break	
1410	Module 5:	Incident Command Overview
1510	Break	
1520	Final Activity	
1620	Final Examination	
1700	Graduation	

Appendix B

195 Counties in North Carolina and Tennessee

Population Stratification

Total Population of North Carolina and Tennessee – 13,738,596 persons

4,000 to 24,999 (66 counties)

Tyrrell County NC 4,149

Pickett County TN 4,945

Van Buren County TN 5,508

Moore County TN 5,740

Hyde County NC 5,826

Hancock County TN 6,786

Camden County NC 6,885

Trousdale County TN 7,259

Perry County TN 7,631

Lake County TN 7,954

Clay County TN 7,976

Graham County NC 7,993

Houston County TN 8,088

Clay County NC 8,775

Jones County NC 10,381

Gates County NC 10,516

Alleghany County NC 10,677

Jackson County TN	10,984
Meigs County TN	11,086
Lewis County TN	11,367
Perquimans County NC	11,368
Sequatchie County TN	11,370
Decatur County TN	11,731
Bledsoe County TN	12,367
Stewart County TN	12,370
Cannon County TN	12,826
Pamlico County NC	12,934
Swain County NC	12,968
Washington County NC	13,723
Grundy County TN	14,332
Chowan County NC	14,526
Crockett County TN	14,532
Chester County TN	15,540
Mitchell County NC	15,687
Polk County TN	16,050
Benton County TN	16,537
Fentress County TN	16,625
Wayne County TN	16,842
Avery County NC	17,167

DeKalb County TN	17,423
Johnson County TN	17,499
Unicoi County TN	17,667
Smith County TN	17,712
Yancey County NC	17,774
Union County TN	17,808
Humphreys County TN	17,929
Currituck County NC	18,190
Polk County NC	18,324
Greene County NC	18,974
Madison County NC	19,635
Morgan County TN	19,757
Bertie County NC	19,773
Haywood County TN	19,797
Warren County NC	19,972
Overton County TN	20,118
Macon County TN	20,386
Grainger County TN	20,659
Scott County TN	21,127
Northampton County NC	22,086
Hickman County TN	22,295
Hertford County NC	22,601

White County TN	23,102
Caswell County NC	23,501
Cherokee County NC	24,298
Ashe County NC	24,384
McNairy County TN	24,653
25,000 to 49,999	(58 counties)
Anson County NC	25,275
Henderson County TN	25,522
Hardin County TN	25,578
Martin County NC	25,593
Marshall County TN	26,767
Montgomery County NC	26,822
Lauderdale County TN	27,101
Marion County TN	27,776
Hardeman County TN	28,105
Rhea County TN	28,400
Fayette County TN	28,806
Transylvania County NC	29,334
Giles County TN	29,447
Carroll County TN	29,475
Macon County NC	29,811

Claiborne County TN	29,862
Dare County NC	29,967
Henry County TN	31,115
Lincoln County TN	31,340
Bladen County NC	32,278
Obion County TN	32,450
Jackson County NC	33,121
Cocke County TN	33,565
Alexander County NC	33,603
Hoke County NC	33,646
Davie County NC	34,835
Weakley County TN	34,895
Pasquotank County NC	34,897
Person County NC	35,623
Cheatham County TN	35,912
Scotland County NC	35,998
Yadkin County NC	36,348
Dyer County TN	37,279
Bedford County TN	37,586
Warren County TN	38,276
Monroe County TN	38,961
Loudon County TN	39,086

Franklin County TN	39,270
Campbell County TN	39,854
Lawrence County TN	39,926
Pender County NC	41,082
McDowell County NC	42,151
Watauga County NC	42,695
Vance County NC	42,954
Dickson County TN	43,156
Jefferson County TN	44,294
Stokes County NC	44,711
Beaufort County NC	44,958
Richmond County NC	46,564
Cumberland County TN	46,802
Franklin County NC	47,260
Coffee County TN	48,014
Gibson County TN	48,152
Granville County NC	48,498
McMinn County TN	49,015
Lee County NC	49,040
Duplin County NC	49,063
Chatham County NC	49,328

Over 50,000 (71 counties)

Tipton County TN	51,271
Roane County TN	51,910
Hawkins County TN	53,563
Haywood County NC	54,033
Robertson County TN	54,433
Columbus County NC	54,749
Edgecombe County NC	55,606
Carter County TN	56,742
Halifax County NC	57,370
Stanly County NC	58,100
Hamblen County TN	58,128
Carteret County NC	59,383
Lenoir County NC	59,648
Sampson County NC	60,161
Putnam County TN	62,315
Rutherford County NC	62,899
Greene County TN	62,909
Lincoln County NC	63,780
Wilkes County NC	65,632
Maury County TN	69,498
Sevier County TN	71,170

Surry County NC	71,219
Anderson County TN	71,330
Brunswick County NC	73,143
Wilson County NC	73,814
Moore County NC	74,769
Caldwell County NC	77,415
Nash County NC	87,420
Bradley County TN	87,965
Wilson County TN	88,809
Burke County NC	89,148
Henderson County NC	89,173
Harnett County NC	91,025
Craven County NC	91,436
Madison County TN	91,837
Rockingham County NC	91,928
Cleveland County NC	96,287
Blount County TN	105,823
Washington County TN	107,198
Wayne County NC	113,329
Orange County NC	118,227
Johnston County NC	121,965
Iredell County NC	122,660

Robeson County NC	123,339
Union County NC	123,677
Williamson County TN	126,638
Rowan County NC	130,340
Sumner County TN	130,449
Randolph County NC	130,454
Alamance County NC	130,800
Cabarrus County NC	131,063
Pitt County NC	133,798
Montgomery County TN	134,768
Catawba County NC	141,685
Davidson County NC	147,246
Onslow County NC	150,355
Sullivan County TN	153,048
New Hanover County NC	160,307
Rutherford County TN	182,023
Gaston County NC	190,365
Buncombe County NC	206,330
Durham County NC	223,314
Cumberland County NC	302,963
Forsyth County NC	306,067
Hamilton County TN	307,896

Knox County TN	382,032
Guilford County NC	421,048
Davidson County TN	569,891
Wake County NC	627,846
Mecklenburg County NC	695,454
Shelby County TN	897,472

Appendix C

100 Counties in North Carolina and Their Population

Total Population of North Carolina – 8,049,313 persons

1.	Alamance	population	130,800
2.	Alexander	population	33,603
3.	Alleghany	population	10,677
4.	Anson	population	25,275
5.	Ashe	population	24,384
6.	Avery	population	17,167
7.	Beaufort	population	44,958
8.	Bertie	population	19,773
9.	Bladen	population	32,278
10.	Brunswick	population	73,143
11.	Buncombe	population	206,330
12.	Burke	population	89,148
13.	Cabarrus	population	131,063
14.	Caldwell	population	77,415
15.	Camden	population	6,885
16.	Carteret	population	59,383
17.	Caswell	population	23,501
18.	Catawba	population	141,685
19.	Chatham	population	49,329

20.	Cherokee	population	24,298
21.	Chowan	population	14,526
22.	Clay	population	8,775
23.	Cleveland	population	96,287
24.	Columbus	population	54,749
25.	Craven	population	91,436
26.	Cumberland	population	302,963
27.	Currituck	population	18,190
28.	Dare	population	29,967
29.	Davidson	population	147,246
30.	Davie	population	34,835
31.	Duplin	population	49,063
32.	Durham	population	223,314
33.	Edgecombe	population	55,606
34.	Forsyth	population	306,067
35.	Franklin	population	47,260
36.	Gaston	population	190,365
37.	Gates	population	10,516
38.	Graham	population	7,993
39.	Granville	population	48,498
40.	Greene	population	18,974
41.	Guilford	population	421,048

42.	Halifax	population	57,370
43.	Harnett	population	91,025
44.	Haywood	population	54,033
45.	Henderson	population	89,173
46.	Hertford	population	22,601
47.	Hoke	population	33,646
48.	Hyde	population	5,826
49.	Iredell	population	122,660
50.	Jackson	population	33,121
51.	Johnston	population	121,965
52.	Jones	population	10,381
53.	Lee	population	49,040
54.	Lenoir	population	59,648
55.	Lincoln	population	63,780
56.	McDowell	population	42,151
57.	Macon	population	29,811
58.	Madison	population	19,635
59.	Martin	population	25,593
60.	Mecklenburg	population	695,454
61.	Mitchell	population	15,687
62.	Montgomery	population	26,822
63.	Moore	population	74,769

64.	Nash	population	87,420
65.	New Hanover	population	160,307
66.	Northampton	population	22,086
67.	Onslow	population	150,355
68.	Orange	population	118,227
69.	Pamlico	population	12,934
70.	Pasquotank	population	34,897
71.	Pender	population	41,082
72.	Perquimans	population	11,368
73.	Person	population	35,623
74.	Pitt	population	133,798
75.	Polk	population	18,324
76.	Randolph	population	130,454
77.	Richmond	population	46,564
78.	Robeson	population	123,339
79.	Rockingham	population	91,928
80.	Rowan	population	130,340
81.	Rutherford	population	62,899
82.	Sampson	population	60,161
83.	Scotland	population	35,998
84.	Stanly	population	58,100

85.	Stokes	population	44,711
86.	Surry	population	71,219
87.	Swain	population	12,968
88.	Transylvania	population	29,334
89.	Tyrrell	population	4,149
90.	Union	population	123,677
91.	Vance	population	42,954
92.	Wake	population	627,846
93.	Warren	population	19,972
94.	Washington	population	13,723
95.	Watauga	population	42,695
96.	Wayne	population	113,329
97.	Wilkes	population	65,632
98.	Wilson	population	73,814
99.	Yadkin	population	36,348
100.	Yancey	population	17,774

Appendix D

95 Counties in Tennessee and Their Population

Total Population of Tennessee – 5,689,283 persons

1.	Anderson	population	71,330
2.	Bedford	population	37,586
3.	Benton	population	16,537
4.	Bledsoe	population	12,367
5.	Blount	population	105,823
6.	Bradley	population	87,965
7.	Campbell	population	39,854
8.	Cannon	population	12,826
9.	Carroll	population	29,475
10.	Carter	population	56,742
11.	Cheatham	population	35,912
12.	Chester	population	15,540
13.	Claiborne	population	29,862
14.	Clay	population	7,976
15.	Cocke	population	33,565
16.	Coffee	population	48,014
17.	Crockett	population	14,532
18.	Cumberland	population	46,802
19.	Davidson	population	569,891

20.	Decatur	population	11,731
21.	DeKalb	population	17,423
22.	Dickson	population	43,156
23.	Dyer	population	37,279
24.	Fayette	population	28,806
25.	Fentress	population	16,625
26.	Franklin	population	39,270
27.	Gibson	population	48,152
28.	Giles	population	29,447
29.	Grainger	population	20,659
30.	Greene	population	62,909
31.	Grundy	population	14,332
32.	Hamblen	population	58,128
33.	Hamilton	population	307,896
34.	Hancock	population	6,786
35.	Hardeman	population	28,105
36.	Hardin	population	25,578
37.	Hawkins	population	53,563
38.	Haywood	population	19,797
39.	Henderson	population	25,522
40.	Henry	population	31,115
41.	Hickman	population	22,295

42.	Houston	population	8,088
43.	Humphreys	population	17,929
44.	Jackson	population	10,984
45.	Jefferson	population	44,294
46.	Johnson	population	17,499
47.	Knox	population	382,032
48.	Lake	population	7,954
49.	Lauderdale	population	27,101
50.	Lawrence	population	39,926
51.	Lewis	population	11,367
52.	Lincoln	population	31,340
53.	Loudon	population	39,086
54.	McMinn	population	49,015
55.	McNairy	population	24,653
56.	Macon	population	20,386
57.	Madison	population	91,837
58.	Marion	population	27,776
59.	Marshall	population	26,767
60.	Maury	population	69,498
61.	Meigs	population	11,086
62.	Monroe	population	38,961
63.	Montgomery	population	134,768

64.	Moore	population	5,740
65.	Morgan	population	19,757
66.	Obion	population	32,450
67.	Overton	population	20,118
68.	Perry	population	7,631
69.	Pickett	population	4,945
70.	Polk	population	16,050
71.	Putnam	population	62,315
72.	Rhea	population	28,400
73.	Roane	population	51,910
74.	Robertson	population	54,433
75.	Rutherford	population	182,023
76.	Scott	population	21,127
77.	Sequatchie	population	11,370
78.	Sevier	population	71,170
79.	Shelby	population	897,472
80.	Smith	population	17,712
81.	Stewart	population	12,370
82.	Sullivan	population	153,048
83.	Sumner	population	130,449
84.	Tipton	population	51,271
85.	Trousdale	population	7,259

86.	Unicoi	population	17,667
87.	Union	population	17,808
88.	Van Buren	population	5,508
89.	Warren	population	38,276
90.	Washington	population	107,198
91.	Wayne	population	16,842
92.	Weakley	population	34,895
93.	White	population	23,102
94.	Williamson	population	126,638
95.	Wilson	population	88,809

Appendix E

Survey Instrumentation

Emergency Management/Public Safety - Terrorism Management Education Questionnaire

This questionnaire is being sent to each of the 194 county-level Emergency Management offices in the states of North Carolina and Tennessee.

Before continuing, please respond to the following questions.

Please circle your answer to the right of each question.

1. Are you familiar with the Department of Justice/Federal Emergency Management Agency Course, **Emergency Response to Terrorism: Basic Concepts**?

Yes

No

2. Are you credentialed to teach **Emergency Response to Terrorism: Basic Concepts**?

Yes

No

If you answered NO to the first question, please forward this survey to someone in your organization who is familiar with this course and have that person complete the survey and return it. If there is no one in your agency who is familiar with this course or is credentialed to teach this course, please circle NO to both questions and return the entire survey.

If you answered YES to the first question or to both questions above, please continue with the next two pages

Thank you very much for your assistance with this questionnaire.

Emergency Management/Public Safety - Terrorism Management Education Questionnaire

Please circle the correct answer and/or fill-in the blank for the following questions.

1. Have you taught Emergency Response to Terrorism: Basic Concepts? Yes No
2. Have Public Safety personnel (Fire Service, EMS, and Law Enforcement) in your county taken this course? Yes No
3. Below are curriculum content topics in the course, please circle your rating for each of the five (5) main topics in the course as to their appropriateness and importance. *Please circle the number for each of the curriculum topics for appropriateness and importance.*

How appropriate is the curriculum content?

How important do you consider this topic for the Public Safety provider?

<u>How appropriate is the curriculum content?</u>						<u>How important do you consider this topic for the Public Safety provider?</u>				
Appropriate	Undecided		Inappropriate			Important		Not Important		
5	4	3	2	1	Understanding and Recognizing Terrorism	5	4	3	2	1
5	4	3	2	1	Implementing Self-Protective Measures	5	4	3	2	1
5	4	3	2	1	Scene Control	5	4	3	2	1

5	4	3	2	1	Tactical Considerations	5	4	3	2	1
5	4	3	2	1	Incident Management Overview	5	4	3	2	1

4. Based on your training and experience, what, if any, additional topics should be included in terrorism response education for the Public Safety provider?

5. In your opinion, which is your preferred method of course delivery, the FEMA computer-based Emergency Response to Terrorism: Basic Concepts (10 hours of course credit) or the traditional lecture/small group classroom delivery style (16 hours)? *Please circle your answer.*

FEMA Computer Course

Traditional Classroom Course

6. In your opinion, which method of course delivery seems to be more effective, the FEMA computer-based Emergency Response to Terrorism: Basic Concepts (10 hours of course credit) or the traditional lecture/small group classroom delivery style (16 hours)? *Please circle your answer.*

FEMA Computer Course

Traditional Classroom Course

7. For your answer in Question #6, why do you think that method is more effective?

8. Other comments about the Emergency Response to Terrorism: Basic Concepts course.

9. Do Public Safety personnel in your county search out courses or materials to better enable them to respond to terrorism incidents?

Yes No

10. Other than the required attendance and examination for the DOJ/FEMA course mentioned above, what strategies and/or activities to ensure learning has your county emergency management agency employed to respond to terrorism incidents?
(It is understood that there are some operational security issues that each agency maintains for terrorism planning. Please address to unclassified strategies and/or answer in general terms).

11. What do you consider your county’s threat level (probability) for terrorism? Please circle your answer.

Significant (50 to 100%)	Moderate (10 to 49%)	Minimal (Less than 10%)
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Appendix F

Cover Letter/Information Sheet

21 June 2007

Emergency Management Coordinator
Carteret County Emergency Services Office
Carteret County Administration Building
Beaufort, NC (zip code)

Dear Emergency Management Coordinator,

My name is Eric Powell, and I am a public safety provider with 22 years of operations experience as well as a PhD student at the University of Tennessee. I would like to invite you to participate in a survey that evaluates curriculum to train Public Safety personnel (Emergency Medical Services, Law Enforcement, and the Fire Service) to respond to terrorism incidents. The goal of this project is to identify the necessary content and most effective training methods for this type of response. This project is being conducted in partial fulfillment for a doctoral dissertation. I am familiar with both the curriculum being evaluated and the awesome responsibilities and challenges facing public safety personnel in their daily activities.

Enclosed is a three page questionnaire that will take approximately ten to fifteen minutes to complete. For your convenience, I have enclosed a self-addressed stamped envelope for return.

Your participation in this study is completely voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed, as you choose. Return of the completed survey (questionnaire) constitutes your consent to participate. Please note that neither your name nor the name of your county will be used in any portion of the report from this survey.

If you have questions at any time about the study or the procedures, you may contact the researcher, Eric Powell, at (727) 741-2598 or via e-mail at johneric@hpaa.sph.unc.edu. If you have questions about your rights as a participant, contact the Office of Research Compliance Officer at (865) 974-3466.

Thank you very much for your willingness to share your opinions and ideas.

Kind regards,

Eric Powell, PhD(c), FF/NREMT-P
5855 27th Avenue South
Gulfport, Florida 33707

Appendix G

University of Miami Emergency Response to Terrorism Course Agenda

Day One

<u>Topic</u>	<u>Time</u>	<u>Format</u>
Pre-course Assessments	30 minutes	MCE, SRF
Terrorism Response Concepts	30 minutes	CBL
Incident Operations	45 minutes	CBL
Personal Protective Equipment (PPE)	50 minutes	EGE
Mass Decontamination	60 minutes	CBL
Incident and Unified Command	45 minutes	CBL
PPE Donning Exercise	45 minutes	SE
Skills Stations		
· Ambulatory Decontamination	45 minutes	SE
· Incapacitated Decontaminated	45 minutes	SE
· Medical Management	45 minutes	SE
· Specialized Equipment	45 minutes	SE

Day Two

Chemical Agents	60 minutes	CBL
Biological Agents	45 minutes	CBL
Radiological and Explosive Agents	45 minutes	CBL
Managing the Incident	45 minutes	TTE
Triage	45 minutes	VBE
Team-Based Scenario Exercises		
· Case 1 (Nerve Agent)	45 minutes	OSCE
· Case 2 (Vesicant Agent)	45 minutes	OSCE
· Case 3 (Cyanide)	45 minutes	OSCE
· Case 4 (Radiological Device)	45 minutes	OSCE
Post-Course Assessments	30 minutes	MCE, SRF, CE

Format Definitions

CBL –	Case-Based Lecture
CE –	Course Evaluation
EGE –	Educational Gaming Exercise
MCE –	Multiple-Choice Examination
OSCE –	Objective Structured Clinical Evaluation
SE –	Skills Exercise
SRF –	Self-Rating Form
TTE –	Tabletop Exercise
VBE –	Video-Based Exercise

Appendix H

Phone Interview Script

Phone Interview Script

“Good morning/afternoon, my name is Eric Powell and I am a graduate student at the University of Tennessee. I am doing a study on emergency management and the course entitled Emergency Response to Terrorism: Basic Concepts. If you have time and would like to participate in this study, I would like to take a few minutes and ask you some questions regarding this course. Please know that your participation is completely voluntary. I need to inform you of the following:

You may decline to participate at any time without penalty. If you decide to participate, you may withdraw from the study at any time, including contacting me by phone after the interview is completed. The data you provided will be returned to you or destroyed, as you choose. Participation in this interview and your verbal affirmation constitute your consent to participate. Please understand that neither your name nor the name of your county will be used in any portion of the report from this interview.

Would you like to participate? (If yes, go to Question #1 on Page #1, if not; thank the emergency manager for their efforts and their time. Give the emergency manager phone contact information and UT IRB information at this time if desired by the participant.

- 1.) Read Question #1 on Page #1 verbatim. (Record response)
- 2.) Read Question #2 on Page #1 verbatim, (Record response and evaluate whether participant can go forward with the survey).

3.) Read Question #1 on Page #2 verbatim. (Record response)

4.) Read Question #2 on Page #2 verbatim. (Record response)

5.) Read Question #3 on Page #2 as follows:

“I am about to ask you about the five (5) main curriculum topics in the *Emergency Response to Terrorism: Basic Concepts* course as to how appropriate you believe that topic to be. Rate each topic on a scale from one (1) to five (5) with a score of one (1) being inappropriate, two (2) being slightly inappropriate, three (3) being undecided, four (4) being slightly appropriate, and five (5) being appropriate.

1.) Understanding and Recognizing Terrorism. (Obtain score)

2.) Implementing Self-Protective Measures. (Obtain score)

3.) Scene Control. (Obtain score)

4.) Tactical Considerations. (Obtain score)

5.) Incident Management Considerations (Obtain score)

6.) Read Question #3 on Page #2 as follows:

“I am about to ask you about the five (5) main curriculum topics in the *Emergency Response to Terrorism: Basic Concepts* course as to how important you believe that topic to be. Rate each topic on a scale from one (1) to five (5) with a score of one (1) being not important, two (2) slightly unimportant, three (3) being undecided, four (4) being slightly important, and five (5) being important.

1.) Understanding and Recognizing Terrorism. (Obtain score)

2.) Implementing Self-Protective Measures. (Obtain score)

- 3.) Scene Control. (Obtain score)
- 4.) Tactical Considerations. (Obtain score)
- 5.) Incident Management Considerations (Obtain score)
- 7.) Read Question #4 on Page #2 verbatim. (Do not offer any examples - record participant's response verbatim).
- 8.) Read Question #5 on Page #3 verbatim. (Record response)
- 9.) Read Question #6 on Page #3 verbatim. (Record response)
- 10.) Read Question #7 on Page #3 verbatim. (Do not offer any examples - record participant's response verbatim).
- 11.) Read Question #8 on Page #3 verbatim. (Do not offer any examples - record participant's response verbatim).
- 12.) Read Question #9 on Page #3 verbatim. (Record response)
- 13.) Read Question #10 on Page #3 verbatim. (Do not offer any examples - record participant's response verbatim).
- 14.) Read Question #11 on Page #3 verbatim. (Record response).

Thank the emergency manager for their time and participation in the survey.

Offer her/him phone and/or mail contact information if they desire.

Appendix I

List of Responses for Open-Ended Survey Questions

Survey Question 4 – Page 2

Based on your training and experience, what, if any, additional topics should be included in terrorism response education for the Public Safety provider?

Responses:

There should be more emphasis given to scene and crowd control for terrorism situations, with more updated scenarios utilized from current events and lessons learned.

In some way, add a topic on prevention.

More on secondary devices and tactics. More on the actual past/present terrorist groups and what they are known or suspected in doing – history repeats.

More instruction on CBRNE agents and detection.

Better information on chemical weapons signs and symptoms. More time spent on mass decontamination and types of decontamination solutions. More discussion time in areas of chemical, biological, and radiological areas.

I would like to see more information included about hazmat PPE to better integrate this material with what our responders already know about hazmat. For example, when level B is appropriate at a CBRNE/terrorism incident versus level A or C. The ERT: BC course seems to primarily address structural firefighting PPE, which does

not mesh well with what our responders are taught in HMTO. Most of our audience for this course are at the hazmat tech level.

It really needs to be updated.

More depth needs to be in the class.

Leadership-related professional development.

The best part of the course is found in the first three modules. You should add more to those.

All emergency agencies and departments need to work together, rather than doing their own thing.

More emphasis should be placed on the importance of this type of training; especially understanding and recognizing terrorism.

Instructors tend to rush this course, there is too much information. It needs to be more in-depth.

The topics included are adequate for a “basic” class. To add much to the class would extend the time needed to teach or take the class and obviously not remain “basic”.

Excellent course, all first responders should have it. “I got killed in the first group interaction scenario. It is better to have that happen there and learn from it than have it happen for real in the field”.

More than satisfied with this class – update examples and scenarios in the course.

I believe further/continued training should be considered.

Basic instruction about decontamination would benefit the program also.

Decontamination is important in any hazardous materials or weapons of mass destruction incident.

The development of a diagram incorporated into the course of study showing future educational courses to achieve the proficiency at the level desired.

More information on decontamination and personal protection.

Basic IED course introduction.

Methodology of terrorism, including examples of all levels of terrorism.

More focus on recognizing and self-protective measures.

I think the addition of more information on home-grown terrorist groups. I think we have a daily threat from these particular groups than we do Al Qaeda.

More time should be spent on overall incident management concepts and operations (NIMS).

How terrorism is just one component of an all hazards perspective that should be the primary focus of any training. It is much more likely for an accident to occur (hazmat, railcar) or weather event, than terrorism.

I think a more common-sense approach would be beneficial.

Emphasis on gang activity as it relates to terrorism.

Bioterrorism, mostly due to the media making everyone aware of the possibility of it.

Field expedited methods for surviving a terrorist event.

Realistic threat assessment based on your locale. What is a high-level target area? What is not? Public information, tips PSAs.

It's been a long time.

Public education and more on communication (interoperability).

Break curriculum into rural and urban components.

Survey Question 7 – Page 3

In your opinion, which method of course delivery seems to be more effective, the FEMA computer-based Emergency response to Terrorism: Basic Concepts (10 hours of course credit) or the traditional lecture/small group classroom delivery style (16 hours)? For your answer, why do you think that method is more effective?

For your answer in Question #6, why do you think that method is more effective?

Responses:

Interactions of student and instructor.

On-line courses are convenient. However, I feel that you learn more with classroom courses than you do with an on-line course.

Class interaction experience.

Networking; opportunity for open discussions; asking questions; some responders simply download the test portion of the on-line classes, skim through the material and answer the test questions.

Hands-on.

Fire, law, and EMS have so many other courses to keep up with for certification, they do not have time to sit in class. With on-line courses, they can work on these at home or during slow times at work.

The classroom environment offers more interaction with students.

I feel that classroom training is retained better. Most people learn better with hands-on.

Students have opportunity to network.

More interaction with people in class – more questions, better for ideas to be brought out.

Usually learn more in classroom settings, also allows for hands-on and joint communications with other agencies.

Allows others to share experiences learned with healthy discussion.

Better interaction and discussion.

More hands-on is offered over computer course.

Computer-based courses are not as effective as someone teaching the course.

Allows for questions and answers and personal discussion with face-to-face communications.

Personal interaction with instructors and classmates. Hands-on training not possible with computer.

There is very little comprehension on the web-based course. The on-line course is seen as a requirement and people rush through on-line to take the test and check it off.

Any time you can teach in the classroom, this provides for interaction with

instructor and student. Also, most importantly, in my opinion, is the exchange of ideas amongst responders. On-line courses just check off a block.

The instructor can provide better visual aids and demonstrations to improve/enhance the course materials.

Allows question and answer periods and student interaction as well as exchange of information.

It is better to have a person to talk to and explain any questions you might have.

I have always believed that classroom-based education provides a broader and experiential learning environment due to the ability to engage in discourse with fellow students.

Student interaction is very important. Computer-based is often used only to gain a certification.

Idea exchange.

Interaction between students and instructor and between students and their peers.

More variety of people in class to give experience – the quality is better.

More easily accessed by more people.

This is an easier and quicker method for seasoned response personnel.

You can move at your own pace – can print out materials and study – less stress for the examination.

It is effective only if the first responder's supervisors are behind it and ensure quality management measures. It is more cost-effective and less time consuming.

Allows for class thought and questions to flow more freely.

Easier for responders to schedule to take the course.

Promotes classroom discussion.

Hands-on portion, interactivity amongst members.

Discussion and feedback from the students, interaction between the students.

In rural areas of the state, a lot of people do not have computers or internet and the ones that do have computers have trouble operating them.

We have a large number of volunteer first responders. The majority of them have jobs and can't attend training sessions during the day hours. It is also hard to get them in on nights and weekends.

While instructing this class, I have found most of the participants have never taken terrorism classes, especially within volunteer organizations. By offering it in a classroom environment, it provides the student/instructor to utilize current situations and subject matter experts for question/answer sessions, creating increased retention.

Hands-on gives the students opportunities to ask questions and clarify information in the course.

More one-on-one training with the instructor and the students, other students also help class.

In rural areas, computer connection speed is not good enough for on-line training.

Questions can be answered.

It is more accessible to public safety personnel than classroom training.

Some people do not have or know how to use a computer.

This method promotes discussion and learning from each other”. Knowledge obtained “in the field”, so to speak, is often times more valuable and sticks with the student longer.

First responders in this county cannot take off work.

Interaction with other students.

Computer-based is usually not taken as seriously.

Students get a chance to talk more about the subject amongst themselves.

Permits not only national response information/training, but also permits local impact/response.

It is easy to take an on-line course and not understand the material. Instructors usually give more personal attention and personal experience.

Lack of agencies to allot training time or expenses to cover time off to complete classroom training.

I think our local responders need the material tailored to our particular area in terms of the threats we face. It helps to discuss targets and threats that could affect us here rather than the generic material you would get with a FEMA computer course.

Classroom environment allows for exchange of ideas, experiences.

On-line courses are too easy to cheat on.

As a classroom setting, you have questions among students and work on different situations and the agencies can look at what other departments do.

The traditional classroom delivery style provides the participant with a hands on understanding of the material and a more “real” life response; while the computer-based

delivery may be more convenient, it may not stay with the person.

The public safety providers in this area are mostly volunteers, they are not compensated to take this course.

The hands-on materials, group contact make this course more effective.

Some folks don't have computers.

Faster to complete.

Allows student participation. Allows feedback to instructor and most importantly, allows students to train together before working together.

The students will learn more from the classroom because they will be able to ask questions.

For small departments, it is hard to send everyone to class. If done on the computer, it is better for us.

Traditional classroom allows you to learn from the instructor and other students real life response and how it was handled.

There are shortcuts on the FEMA computer-based format. Lives are at stake, you should not take shortcuts. The class is good as it allows students to make decisions in group process, just like in real life. You cannot participate like that in a computer course.

Because of the exchange of information among the classroom group.

Some people do not have or know how to use a computer.

Computer courses do not allow for question and answer time. I feel that traditional classroom is always better.

Ability for questions and answers and also instructor ability to inject relevant current activities.

Question and answer.

The instructors have the ability to talk with the students and gain interaction – this gets everybody thinking, you get to use the expertise of the instructors.

Better learning experience – better discussion and experience.

Survey Question 8 – Page 3

Other comments about the Emergency Response to Terrorism: Basic Concepts course.

Responses:

More should follow.

This course needs to be taught more. Good informational class for first responders.

FEMA computer course gives more public safety personnel the opportunity to learn more information if they are not required to attend additional training.

Good course, but it is seen as a one-time class. Need some type of on-going training?

Good course, should be part of NIMS training.

I wish we would focus more on mitigation principles and recovery/response to an all-hazards. We won't know for sure that an incident is terrorism until after an investigation is done. I am scared of the scare-tactic hype.

I believe that it should be required every three to five years.

Needs to be taught more on the local level through (state emergency management agency)

The new training concept for this class is largely repetitive. Creating a more streamlined outline that gradually increases knowledge base would be more effective.

You've got to start somewhere.

I think the time for the Incident Management module could be better spent on another topic. Incident management is very important, however, our responders have been inundated with incident command system and NIMS training and they do not get much out of this overview.

The Basic Concepts course may be okay using the computer-based format and it would probably be taken by more people than a classroom-delivered class. It is difficult for public safety personnel to take two days to attend classes, especially considering their workloads.

I would like to see activities in each module so the students can work together as a team.

As an introductory course, the computer-based learning gives the student the basic information before entering to more specific classes.

Great class.

Survey Question 10 – Page 3

Other than the required attendance and examination for the DOJ/FEMA course mentioned above, what strategies and/or activities to ensure learning has your county emergency management agency employed to respond to terrorism incidents?

Responses:

Incident management and NIMS training.

Exercises, drills, etc.

We are a small county with minimal threat. We also have very little money for training. FEMA and (state emergency management agency) are our main courses.

We have hosted classes from several different entities to generate more interest (i.e. WMD classes, railroad training).

Classes that (state emergency management agency) sends out.

News releases, intelligence releases, coordination between departments.

I am the only one in the emergency management agency. I went through a course with fire and police.

County emergency management agency stresses a curriculum that moves the responder to hazmat technician certification.

None, this is a rural county.

We have started a hazardous materials response team.

Not really.

Preparedness by local training of responders. Exercises, both local and are-wide response.

Regular emergency management meetings. Emergency drills held at least annually, usually more often.

All personnel are NIMS compliant. Working to make sure all EMA staff are hazardous materials technician certified.

Our region conducts frequent exercises to practice and evaluate our response to a terrorism incident.

Better trained leaders, more knowledge, education, and identify people with talent and ability to be leaders in crisis situations (non-political).

NIMS 300 and 400 courses are good (classroom) as long as the standards are adhered to across the board. Communications are another issue – plain speech should be used.

Having tabletop exercises and tabletop drills.

Participating in exercises, not only in our own jurisdiction, but also in our Homeland Security District (naming counties). Working with the public safety personnel in the county, as well as industry, and the private sector to provide as much information as possible to better prepare them for any disaster or emergency event.

The EM stresses for first responders to be aware politically for what is going on in the world and to be aware of the “unforeseen”.

Pressed the Incident Management (Command) System courses as they are critical.

We have formed the (county named) Hazardous Operations Team to deal with CBRNE incidents. The team is made up of personnel from all disciplines and jurisdictions in our county.

We are part of Homeland Security District (named), which includes (named counties). We train and exercise together to be better prepared to respond to a terrorism incident.

We are always training and updating to make sure we are current on all aspects.

To continue to offer available courses to emergency responders – terrorism, hazardous materials, etc. In addition to full-scale exercises, using terrorism as a back-up scenario.

Exercises to test what they learn, set up something that forces the responders to “think outside the box”, because the bad guys will think outside the box.

Let the responders know of other courses and training that is available for them to attend.

Our agency continues to have drills and exercises to provide as much training as possible.

Getting support from the top (county/city mayors, government officials) as they buy into these courses, it is easier to implement at lower levels of management.

At this time, I am a volunteer director that works for the 911 Center and am not trained enough to answer this the way it needs to.

Hazardous materials courses, explosives response courses through New Mexico tech, stressing personal safety.

Chemistry classes.

Make information available as it is received.

(named county) ensures that hazardous materials classes are scheduled throughout the year as well as upgrade classes. At times, these classes do include weapons of mass destruction.

We try to incorporate tactics into exercises – community type awareness.

Exercises, on-line courses.

All of our first responders have completed NIMS 100, 200, 700 and 800.

We strongly support exercising our plans. This process validates our training.

We ask for participation in exercises.

Refresher courses.

Hazardous materials decontamination.

Use the community college to help with classes.

Many agencies send personnel to the National Fire Academy and the Emergency Management Institute and State and Federal law enforcement sites for other classes.

Knowledge of world/current affairs via media outlets, internet, periodicals.

Review of after-action reports for additional response information and “lessons learned”.

Exercises, including some of the concepts in the class.

We have an all-inclusive emergency operations plan that includes terrorism. We conduct several drills per year with one full-scale activity strictly dedicated to terrorism.

Time/effort/funding spent on collaboration/regionalization and planning of resources to respond.

Continuous training, both classroom and on-line. Also, meetings with other responders.

All-hazards planning, signs and symptoms of terrorism, operations workshops, equipment purchases, discussions with major industries in our jurisdiction.

Network training opportunities to multiple agencies and to region.

Foster interagency communication through regularly scheduled meetings, planning initiatives and exercises.

Grant money has a lot to do with terrorism; it would be used to facilitate exercises.

Developed a complete homeland security local strategy that supports state and federal strategy.

Close communication contact with potential target locations for pre-incident planning and EOP updates.

Attempting to create a “buy-in” from volunteer agencies.

All responders must have a minimum of “awareness” training before being allowed to perform their duties.

Table-top, functional, and full-scale exercises.

Conducting multi-agency planning and exercises.

Conducted several exercises as well as purchased equipment.

Vita

John Eric Powell was born in Fayetteville, North Carolina and was raised in the coastal areas of the Southeastern United States. He attended twelve different schools in his grade school and secondary school education in the states of North Carolina, South Carolina, and Florida. He graduated from Emsley A. Laney High School in Wilmington, North Carolina in 1985. From there, he went to Cape Fear Community College, earning a Certificate in North Carolina Basic Law Enforcement Training in 1987 and then on to Western Carolina University receiving a Bachelor of Science in Emergency Medical Care in 1991. Subsequently, he attended the Medical University of South Carolina and received a Master of Science in Health Professions Education in 2000. In addition to his Doctor of Philosophy degree pursuit at the University of Tennessee, he earned a Graduate Certificate in Community Preparedness and Disaster Management from the University of North Carolina at Chapel Hill in 2007 to facilitate literature review endeavors in this terminal degree endeavor. His graduation at the University of Tennessee is projected for December 2008. His further academic plans include pursuit of an additional graduate degree teaching, and engaging in further instruction at the University of South Florida, to include further pragmatic literature review and grant writing endeavors in the areas of public health, emergency management, the fire and EMS services, humanitarian assistance, conflict resolution strategies (via health care/public safety provision), and operations-related response to terrorism incidents in the United States, Europe, and Africa.