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Understanding the Perceptions and Decision-Making Behaviors of First Responders in the Context of Traumatic Events and PTSD

Sunday O. Olatunji
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Walden University

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Sunday Olatunji

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Walden University
2018

Abstract

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the Context of Traumatic Events and PTSD

by

Sunday Olatunji

MSC, University of Phoenix, 2015

HND, Ogun State Polytechnic, 1994

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Criminal Justice

Walden University

November 2018

Abstract

Previous researchers have indicated that first responders are in an ever-changing environment, and unfortunately, the prevalence of post-traumatic stress disorder (PTSD) among first responders is increasing. This study sought to better understand first responders' perceptions of emergency preparedness protocols and training, as well as the prevalence of PTSD. This study also examined first responders' thoughts, decision making processes, and protective actions information, communications necessary during situations of emergency preparedness for traumatic events, and how PTSD impacted this process. A sample of 16 first responders of various ages was recruited for the purpose of this study. The participants were made up of firefighters, police officers, and emergency medical services. This study drew from protection-motivation theory, the theory of planned behavior, sensemaking theory, and decision making theory. The researcher used a 15-question, semi-structured interview. Interpretive phenomenological analysis was used for qualitative analysis. The following themes emerged: (a) emergency preparedness is perceived as critical; (b) emergency preparedness is perceived as inadequate; (c) first responders are unlikely to seek treatment; (d) the development of psychological disorders is perceived as likely; (e) there can be hesitation or feelings of "freezing" during emergencies; (f) there can be numbness and distraction during emergencies; and (g) first responder training helps to make decision making automatic. Implications, suggestions for future research are discussed, and the need for additional studies in first responder training that consider the location of first-responders as well as the need for first responders' trainings to promote positive social change.

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Dedication

I dedicate this page of my dissertation to my Mother, late Mrs. Abigail Olatunji and my brother, Mr. David Olatunji, who sent me to school. Thank you for working me through the journey of life up to this moment. Also, my wife Mrs. Olatunde Olatunji, I am grateful that God placed you in my life. I love you and look forward to renewing my love with you in the world beyond. Thank you for being there for me anytime. One love will continue to keep us together!

Finally, I want to thank my children, Abigail, Michael, and Olusegun, for enduring my struggle, reading always, and even absence from home. I love you all team.

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To Dr. Glenn Starks, thank you for being an instructor and my committee member. I cannot begin to thank you enough for being there for me. Your actions and support motivated and assisted me to believe that this dream is a matter of time, thank you for your help.

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Chapter 1: Introduction to the Study

Citizens the world over are living in what Al-khaldi et al. (2017) call a *hyper-volatile, hyper-uncertain, hyper-complex, and hyper-ambiguous (VUCA)* environment. At global and international levels, the increase in terrorism instigated changes in public policy and discourse focused on emergency preparedness (Hambridge, Howitt, & Giles, 2017). In turn, these changes have impacted the functions of emergency preparedness, especially terrorism-specific preparedness (Hambridge, Howitt, & Giles, 2017),

whereby the additional training would be required so that first responders can prepare for unexpected. Emergency assessment, hazard operations, population protection, and incident management are carried out by emergency response personnel (Haddow, Bullock, & Coppola, 2017; McEntire, 2014; Schwab, Sandler, & Brower, 2016). Such change was especially elicited with the onset of September 11, 2001, terrorist attacks on the New York World Trade Center (WTC). Emergency management dramatically shifted from an “all hazards” characterization, to “responders prepare[d] for calamities with plans that [applied] regardless of their precise nature” (Haddow et al., 2017, p. 19). As emergency management systems focus their efforts on preparing for and responding to terrorist events, these efforts should not diminish their capabilities or capacity for dealing with natural hazards (Haddow et al., 2017).

These changes come from the obvious efforts toward redefining what constitutes disaster and additional efforts at defining terrorism; and with such changes have also come challenges impacting the response efficacy and capabilities of emergency first responders law enforcement, firefighters, and emergency medical technicians (EMTs) at the national, regional, and state levels, as well. The ability of the first responders to distinguish group acts of terrorism from solo

acts of terrorism is confounded (Geronazzo-Alman et al., 2016; Gill, Horgan, & Deckert, 2014; Holgersson, Sahovic, Saveman, & Björnstig, 2016; Landahl, 2007; McCaffery, Richardson, & Bélanger, 2016; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014; Smith, 2015; Spaaij & Hamm, 2015).

First responders, emergency management protocols, and procedures are challenged; the abilities to act on and report on levels of incidence are compromised (Liu, Jing, Sun, & Huang, 2014; Miraglia, 2013; Motola, Burns, Brotons, Withum, Rodriguez, Hernandez, et al., 2015; Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016; Peleg & Rozenfeld, 2015; Smith, 2015), and the capacity for conducting effective mass casualty training is undermined (Chittaro & Sioni, 2015; Liu, Jing, Sun, & Huang, 2014; Miraglia, 2013; Motola et al., 2015; Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016; Smith, 2015). Moreover, the confounding influence on law enforcement and healthcare first responder protocol(s), decision-making efforts, and behaviors has been exacerbated with the increased prevalence of posttraumatic stress disorder (PTSD) among first responders: firefighters, emergency medical technicians (EMTs), and police officers (Campbell, Langhinrichsen-Rohling, Sweeney, & Shropshire, 2015; Geronazzo-Alman et al., 2016; Motola et al., 2015).

In sum, the 9-11 terrorist attacks and increases in incidents of terrorism have resulted in social, psychological, and practical changes to first responder emergency preparedness and have impacted the sensemaking, decision-making, and protective action of emergency management agents and agencies (Kuligowski, 2011).

Warranting a need for understanding the impact of such change; a need for measuring such change (Grist, 2007); and a need for accommodating the posttraumatic stress, anxiety, and

other psychological disorders experienced by first responders to incidents of terrorism; and a need for remediating training policy, protocol, process, and procedure for emergency preparedness management. As a result of these psychological disorders, examination of law enforcement protocols, perceptions, and psychological influences from exposure to terrorism events is needed to improve emergency preparedness, training implementation, and incidence rates of PTSD that have not been consistently examined (Campbell, Langhinrichsen-Rohling, Sweeney, & Shropshire, 2015; Geronazzo-Alman et al., 2016; Motola et al., 2015). Therefore, the purpose of this interpretive phenomenological study was to examine the perceptions and sensemaking, decision making, and protective action (Kuligowski, 2011) behaviors associated with emergency preparedness for terrorist incidents in first responders (Kuligowski, 2011).

The goal of this study was to examine the context of first responders' potential for developing PTSD, and to understand the components within the context of traumatic events in general and as applied to first responder perceptions and behaviors associated with emergency preparedness for traumatic incidents. It is important to understand this component in the context of terrorism, in general, to probe further and get first responders' perceptions and behaviors associated with emergency preparedness for traumatic incidents.

Background of the Study

The changing environment support a need for changes in emergency preparedness protocol and training for the first responders has, in turn, prompted a need for qualitative, experiential, and psychological research. Specific research includes the need to understand the effectiveness of first responder protocols and the influence of traumatic event-related psychological factors on emergency preparedness and emergency response tactics. However,

there is a gap in the literature in the knowledge about perceptions and sense making, decision making, and protective action (and recovery) behaviors associated with emergency preparedness for traumatic incidents in first responders.

Some current research included examination of effective emergency response preparedness protocols (Barbera & Macintyre, 2014; Decker, 2011; Flynn & Speier, 2014; Hambridge, Howitt, & Giles, 2017; Jennings & Arlikatti, 2016; Jensen, 2011; Jensen & Waugh, 2014; Jensen & Youngs, 2015; Kapucu & Hu, 2016; Luna, 2015; Osgood, Scanlon, Jotwani, Rodkey, Arshanskiy, & Salem, 2015; Reid, Brown, & Landis, 2016). Some current research included an examination of barriers to emergency preparedness and capabilities (Crowe, Glass, Raines, Lancaster, & Waggy, 2015; Mendelson & Berg, 2016; Neal & Webb, 2006; Pfeifer, 2006; Pressman, Pietrzyk, & Schneider, 2011; Simon, Goldberg, & Adini, 2015; Wenji, Turale, Stone, & Petrini, 2015).

Additional research included examination of lone terrorism as a barrier contributing to the fragmentation of law enforcement departments and multi-agency efforts (Byman, 2014; Campbell, Langhinrichsen-Rohling, Sweeney, & Shropshire, 2015; Geronazzo-Alman et al., 2016; Kobelt, 2015; Motola et al., 2015; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014; Smith, 2014; Spaaij & Hamm, 2015).

Additionally, the research study examined the role of emergency preparedness training in first responder sense-making, decisionmaking, and recovery action (Chittaro & Sioni, 2015; Flynn, 2016; Johannig, Auger, Morey, Yang, & Olmsted, 2014; Kulawiak & Lubniewski, 2014; Kuligowski, 2011; Lu & Xue, 2016; McEntire, 2014; Motola et al., 2015; Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016; Reid, Brown, & Landis, 2016; Smith, 2015; Timmons, 2009).

However, only a small amount of research included investigation of the influence of traumatic events on them sense making, decision making, and protective and recovery actions and risk perception (Gerwehr & Hubbard, 2006; Harvell& Nisbett, 2016; Howitt, 2016; Kuligowski, 2011, Mahoney, 2010; Pfeifer, 2006; Thompson, Rehn, Lossius, & Locky, 2014); a limited amount of research included investigation of acts of traumatic event and first responder psychological issues—such as sensory overload, responder burnout, and suicidal ideation and behavior (Smith, 2014; Stanley, Hom, & Joiner, 2016; Timmons, 2009)—and PTSD disorders (Bergen-Cico et al., 2015; Cone et al., 2015; Feder et al., 2016; Garner, Baker, & Hagelgans, 2016; Geronazzo-Alman et al., 2016; Pietrzak, 2015; Pietrzaket al., 2014; Schwarzer, Cone, Li, & Bowler, 2016; Skogstad, Fjetland, & Ekeberg, 2015; Wilson, 2015); and very little research included investigating the emergency preparedness perceptions of first responders (Al-khadi et al., 2017; Fisher, 2015; Flynn & Speier, 2014; Hambridge, Howitt, & Giles,2017; Jensen & Waugh, 2014; Jensen & Youngs, 2015; Jennings & Arlikatti, 2016; Luna, 2015; Reid, Brown, & Landis, 2016).

One of the foremost purposes for frameworks is to clarify terms to provide sound definitions to understand, in context, problems, hazards, crises, disasters, catastrophes, and emergencies (McEntire, 2004). According to McEntire (2004),

If there was no consensus on what a “hazard” is, we would not be able to understand disasters nor explain how hazards relate to other terms such as vulnerability. Without clarity on this subject, a discussion about different types of hazards (e.g., natural, technological, civil) would be impossible or unproductive. Definitions are thus required if

knowledge is to be generated and if links are to be found among various topics and variables. (p. 2).

Likewise, first responders rely on such clear definitions not only to distinguish among problems, hazards, crises, disasters, catastrophes, and emergencies, but to identify acts of traumatic incident, which demand first responder emergency preparedness and crisis management (Geronazzo-Alman et al., 2016; Gill, Horgan, & Deckert, 2014; Holgersson, Sahovic, Saveman, & Björnstig, 2016; Landahl, 2007; McCaffery, Richardson, & Bélanger, 2016; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014; Smith, 2015; Spaaij & Hamm, 2015). However, just as definitions exist for classifying problems, hazards, crises, disasters, catastrophes, and emergencies, and there is as yet no universal definition of “terrorism” (Hoffman, 1998; McCaffery, Richardson, & Bélanger, 2016; Nicholson, 2010; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014). This fact not only restricts theoretical discussion but also creates a barrier for effective first responder emergency preparedness and crisis management. The current study, therefore, begins with an attempt to define and classify problems, hazards, crises, disasters, catastrophes, and emergencies and then to work with current, general definitions of terrorism which could lead to conceptualization, classification, and discourse regarding causal relationships.

Defining Problems, Hazards, Crises, Disasters, and Emergencies

Miraglia (2013) cited the work of John Dewey in defining a problem as a perceived difficulty. In the case of first responder traumatic event incident response, the problem becomes one of responding to a larger, more impactful difficulty, including distinguishing the sources of the problem (Geronazzo-Alman et al., 2016; Gill, Horgan, & Deckert, 2014; Holgersson,

Sahovic, Saveman, & Björnstig, 2016; Landahl, 2007; McCaffery, Richardson, & Bélanger, 2016; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014; Smith, 2015; Spaaij & Hamm, 2015). Haddow, Bullock, and Coppola (2017) offered the following definition of *hazard*: "...a source of danger that may or may not lead to an emergency or a disaster" (p. 33). Regarding emergency preparedness, McGlown and Robinson (2011) explained that emergency personnel conducts a hazard vulnerability analysis (HVA) to anticipate the source of danger as related to operational strengths and vulnerabilities.

McGlown and Robinson (2011) and FEMA authorities (e.g., Blanchard, 2006; McEntire, 2004) defined a disaster as a calamity which causes "widespread damage and distress, often considered synonymous with a catastrophe. Further, a disaster is also deemed a hazard in action and causing damage that afflicts a community beyond that community's resource capacity—in turn warranting "a multiagency response" (Blanchard, 2006, p. 13). McGlown and Robinson (2011) and FEMA authorities (e.g., Blanchard, 2006; McEntire, 2004) defined an emergency which is derived from the Latin, *emergens*, or, *emergere*, for "emerging" (as cited in Harper, 2017) as that which occurs unexpectedly and requires an exigent response or action. Most calamities—disasters, crises—are emergent in nature, but not all emergencies are disasters or crises (Blanchard, 2006). McGlown and Robinson (2011), Haddow et al. (2017), and FEMA authorities (e.g., Blanchard, 2006; McEntire, 2004) also take the term *crisis* from *Webster's New International Dictionary, Unabridged* to define a crisis as somewhat synonymous with *disaster* and *emergency*. However, as the Latinized form of the Greek term, *krisis* (Harper, 2017), it is a situation that has gotten to a critical turning point—typically for the worst (Blanchard, 2006; McGlown & Robinson, 2011), thereby posing a severe threat (Blanchard, 2006).

Defining Terrorism

Authorities such as Haddow et. al. (2017) and the FEMA *Hazards, Disasters and U.S. Emergency Management* instructor, B. Wayne Blanchard (2006), suggested that any hazard, disaster, etc. can be classified according to the extent of social or community disruption and according to the extent of monetary damage incurred.

According to Drabek (2005), any hazard, disaster, emergency, etc. can be categorized according to four defining features: (a) length of forewarning, (b) magnitude of impact, (c) the scope of impact, and (d) duration of impact. For instance, with the 9-11 attacks, arguably no forewarning existed (Kuligowski, 2011). The attacks impacted New York and the United States citizens, directly and indirectly, resulting in nearly 3,000 deaths and \$10 billion in property and structural damages as well as aftereffects on the national and world economy (Kuligowski, 2011; Morgan, 2009a). And the impact of the attacks reached worldwide in terms of how psychologically damaging they were (Garlin, 2016; Kuligowski, 2011; Morgan, 2009b).

Reaching into the 21st century, *terrorism* is now defined in general according to Haddow, Bullock, and Coppola (2017) as “force or violence used against persons or property to intimidate, coerce or create fear in order to achieve political, religious, or ideological goals” (p. 64).

Byman (2014) adds that “terrorism is always violent or poses a threat of violence; is always political; carries intentional psychological repercussions; appears irrational but is actually planned, premeditated, and purposeful; has an inherent, identifiable structure or chain-of-command (so even lone wolf terrorists are part of a larger cause); does not present as identifiable (wears no uniforms or labels) and does not occupy any obvious delimited space; does not differentiate between combatants and non-combatants; and is perpetrated by some sub-national or

non-state group against vulnerable targets in order to advance the entity's political, ideological, or religious cause.”

In this research, the *traumatic event* was defined as a violent event posing a threat to people and property that is perpetrated by an individual or group in order to advance a political, religious, or ideological cause or causes. In turn, *emergency preparedness* was defined as a state of readiness and standardization of behavior protocols to respond to terrorism-related crises (Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016). Terror and terrorism, as environmental, communal, and social “hazards” (Blanchard, 2006; Haddow, Bullock, & Coppola, 2017), have further been classified according to group or lone actor status, according to foreign or domestic orientation, and according to indirect or direct attacks, as well as according to motivating factors (Haddow, Bullock, & Coppola, 2017; Miraglia, 2013).

In the United States, direct attacks of terrorism perpetrated by foreign terrorist factions are most clearly seen as described above, on Sept 11, 2001, by 19 al-Qaeda members. Below are events of domestic terrorism as they have influenced in some states.

Lone Wolf Terrorism and Metropolitan Atlanta

Characteristics of lone actor terrorism incidents are frequently linked to a particular geographic location, extremist affiliations or ideals, gender, age, education, employment, military experience, criminal activity, and mental health factors (Gill, Horgan, & Deckert, 2014; Pantucci, R., Ellis, C., & Chaplais, 2016; Phillips, 2014; Spaaij & Hamm, 2015). The most renowned lone wolf domestic terrorist attack was perpetrated by US Army veteran, Timothy McVeigh, who, motivated to exact revenge for Ruby Ridge, Waco, and other United States government sieges, bombed the Alfred P. Murrah Federal Building in Oklahoma City in April of

1995. In Metropolitan Atlanta alone, three lone wolf domestic terrorist attacks have plagued the region:

- During the 1996 Olympics, Eric Rudolph made a phone call from a payphone to 911, saying, “There is a bomb in Centennial Park. You have 30 minutes.” But, 22 minutes after calling 911, he detonated a 40-pound bomb at Centennial Olympic Park, killing four people and injuring 111 more (CNN Library, 2016; Georgia Emergency Management & Homeland Security Agency, 2014).
- In 1997, Eric Rudolph was suspected to have attacked with bombs at (a) a Sandy Springs, Atlanta abortion center;(b) in 1997, the gay nightclub, the Otherside Lounge, which injured five people; and (c) in 1998, a Birmingham, Alabama abortion clinic where the terrorist attack injured clinic nurse, Emily Lyons, and killed police officer and part-time clinic security guard, Robert Sanderson (Georgia Emergency Management & Homeland Security Agency, 2014; Thomas, 1997).
- Sometime in 2006, Georgia Tech students, Syed Haris Ahmed and Ehsanul Islam Sadequee, conspired to provide material support for terrorism by meeting online and traveling to meet several others to discuss carrying out terrorist attacks in the United States and abroad (Georgia Emergency Management & Homeland Security Agency, 2014; Murgatroyd, 2009).

In all of these instances of terrorism, it was the responsibility of first responder personnel to practice efficient and effective sensemaking, decision-making, and protective action (Kuligowski, 2011).

With emergency assessment, hazard operations, population protection, and incident management and intervention strategies (Haddow, Bullock, & Coppola, 2017; McEntire, 2014; Schwab, Sandler, & Brower, 2016).

MetroAtlanta Emergency Preparedness

MetroAtlanta has operations in place for mitigation, response, and recovery before, during, and after a disaster (GEMA, 2015; Heritage Emergency Response Alliance, 2017). Atlanta HERA (Heritage Emergency Response Alliance, 2017), a coalition of institutions that want to preserve the cultural heritage of the region, have established region-wide planning for emergency preparedness.

These efforts range from awareness raising, networking, and information sharing to engage in disaster planning to educational opportunities to local and state emergency management collaboration to identifying emergency preparedness resources need and preparing for and responding collectively to disasters in the region. GEMA (2015) has an emergency operations plan in place for natural (dam failure, drought, earthquakes, hailstorms, inland flooding, fire, lightning, sinkholes, tornados, and tropical cyclones), technological (hazardous materials release, radiological release, structural collapse, transportation incidents, and utilities failure), and human-caused hazards (terrorism).

GEMA remains attentive to all of these potential hazards at all times and the (GEOP), which is compliant with the (NIMS) (more fully discussed). And which supports the National Response Framework, is activated in the event of any particular hazard. Emergency management begins at the local level with mayors, city managers, or county managers (chief executive officers of each jurisdiction) taking responsibility for the safety and well-being of its citizens

(GEMA, 2015). Each local emergency management program is overseen by its local Emergency Management Agency, which puts into place its Local Emergency Operations Plan.

The local EMA and its director is in collaboration with and supported by, county, city, and agency constituents, which are responsible for specific emergency management functions. During an emergency, three circles of responders get involved in emergency management, according to their status as first circle responders, second circle responders, or third circle responders (Hambridge, Howitt, & Giles, 2017). Figure 1 shows the differentiation of circles involving firefighting, law enforcement, emergency medical services, public works, environmental, and natural resources agencies.

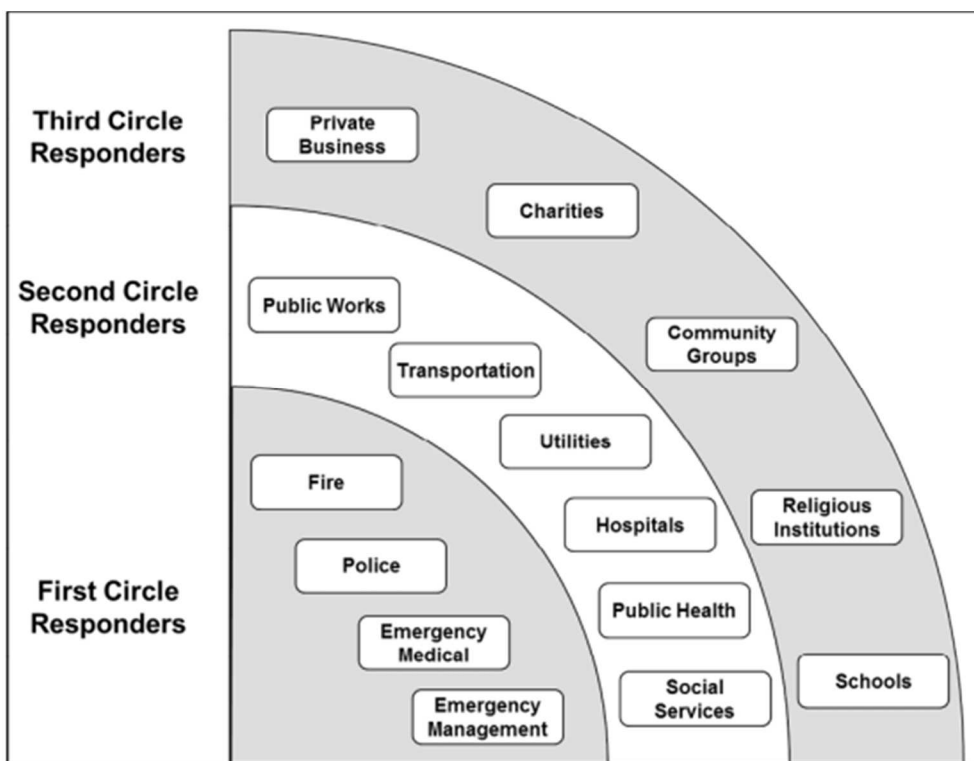


Figure 1.

From “The responder circles,” by N. B. Hambridge, A. M. Howitt, and D. W. Giles 2017, “Coordination in Crises: Implementation of the National Incident Management System by Surface Transportation Agencies,” *Homeland Security Affairs* 13, Article 3, p. 8.

First responders in the metropolitan Atlanta region work in conjunction with the metroAtlanta agencies— EMTs and other first responders working in conjunction with the emergency operations center and all agencies in collaboration under the auspices of the NIMS (FEMA, 2017a, b; Jensen & Waugh, 2014; Jensen & Youngs, 2015).

According to the National Research Council (2006), what is required for protective action is a capacity for, and exercising of, sensemaking and decision making.

The population warning, alerts, and updates; implementation of sheltering-in-place, alternative products, and recall and collection of possibly contaminated products; search and rescue, and treatment and transportation service(s). As explained by Mahoney (2010), risk assessment and perception require checks of seven components: (a) threat (which informs a department of weaponry resource needs), (b) criticality (measured according to ranking of assets and methods of countering), (c) vulnerability (likelihood of attack success on assets), (d) response and recovery capabilities, (e) impact (consequence), (f) risk (threat + vulnerability + impact), and (g) needs (Mahoney, 2010).

In context, these perceptions and risk assessments reflect best-practice emergency response patterns and start the emergency response process as outlined under the NIMS) protocol (FEMA, 2017b) for the National Response Plan (NRP). NIMS is based on five components or divisions—Command and Management, Preparedness, Resource Management, Communications and Information Management, and Ongoing Management and Maintenance (FEMA, 2017b).

Three main organizational systems— Incidence Command Systems (ICS), Multiagency Coordination Systems (MSCs), and Public Information (PI)—make up Command and Management (FEMA, 2017b): ICS emphasizes command and control operations; MCSs focus on multi-agency collaborative efforts and protocol, and PI concerns communications. As the NIMS and CIS imply, and as a review of the literature reflected, the operative constructs for first responders and emergency preparedness during a traumatic attack involved command and control; coordination and organization through collaboration; and communication.

The second NIMS component, Preparedness, is the foundation of effective incident management (FEMA, 2017b). The third NIMS component, Resource Management, involves NIMS-defined standards for “[inventorying], [mobilizing], [dispatching], [tracking, and [recovering] resources over the life cycle of an incident (FEMA, 2017b, n.p.). NIMS requires the fourth NIMS component, Communications, and Information Management “for a standardized framework for communications, information management (collection, analysis, and dissemination), and information-sharing at all levels of incident management” (FEMA, 2017b, n.p.). The fifth NIMS component, Ongoing Management, and Maintenance, “establishes an activity to provide strategic direction for and oversight of NIMS, supporting both routine review and the continuous refinement of the system and its components over the long term” (FEMA, 2017b, n.p.).

According to the MetroAtlanta Ambulance System (MAAS; 2017), in accordance with NIMS, the (EOC) carries out seven basic functions during a disaster, including emergency services initiation, emergency event record taking and maintenance, information management, resource management, disaster analysis, decision making, and recovery. On-site emergency

responder activities requiring additional support, resources, and services are referred to the Cobb County EOC, which also supplies inter-agency coordination, executive emergency decision making, and communications operation streamlining. Commonly, during a threat or hazard in the area, the EOC and first responders including police, EMTs, and firefighters follow the NIMS protocol (Jensen & Waugh, 2014; Jensen & Youngs, 2015).

First responders are trained and practice in order to prepare for a traumatic event or terrorist attack “involving multiple target locations and teams of perpetrators” (Sadler, 2017) or involving single perpetrators known as lone wolf actors (Byman, 2014; Campbell, Langhinrichsen-Rohling, Sweeney, & Shropshire, 2015; Geronazzo-Alman et al., 2016; Kobelt, 2015; Motola et al., 2015; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014; Smith, 2014; Spaaij & Hamm, 2015) by following sense making, decision making, and the protective action protocol.

In sense-making, first responders take consideration of intelligence—all available information—for risk assessment and share information with appropriate agencies (FEMA, 2017a, b; Flynn, 2016; Kuligowski, 2011; Lu & Xue, 2016; Timmons, 2009). They take into account responder knowledge of biological, nuclear, incendiary, chemical, and explosive (B-NICE) threat outward warning signs—taking into consideration what they know of the details of the traumatic incident. In decision making, first responders determine preresponse considerations and make assessment of vulnerabilities, including those in or at the following areas or sites and the following functions: incident site operations, planned primary and secondary response routes, command and control sites, multiple incident site operations considerations, planned and proposed staging Areas, primary and secondary communications plans, medical operations, and medical receiving facilities (Chittaro & Sioni, 2015; FEMA, 2017a, b; Flynn, 2016; Johanning,

Auger, Morey, Yang, & Olmsted, 2014; Kulawiak & Lubniewski, 2014; Kuligowski, 2011; Lu & Xue, 2016; McEntire, 2014; Motola et al., 2015; Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016; Reid, Brown, & Landis, 2016; Smith, 2015; Timmons, 2009).

In taking protective action, first responders will control vulnerability by way of security and security-related measures involving incident site operations; planned primary and secondary response routes; command and control sites; multiple incident site operations considerations; planned and proposed staging areas; primary and secondary communications plans; medical operations; medical receiving facilities; casualty collection points; temporary and fixed mortuary facilities; evacuation sites; and personnel and equipment resources for resupply, security, mass casualty response transportation, medical, command, and control (Clubb, & Hinkle, 2015; Crossler & Bélanger, 2014; FEMA, 2017a, b; GEMA, 2015).

In so doing, first responders will take planned actions on arrival and until specialized regional/national teams that are capable of providing resources and support to the local authorities arrive—actions that include incident prioritization for personal protection, scene security, isolating hazard areas, evacuation/protect-in-place, rescue, decontamination, and emergency medical cases. And for incident stabilization including isolating the hazard area, controlling entrances and exits, controlling patients and contaminated/exposed victims, establishing outer perimeters, controlling active disseminating devices, securing ventilation, controlling HVAC systems, controlling render-safe operations by EOD personnel, protecting exposures, and controlling utilities (FEMA, 2017a). First responders will take preparedness actions to avoid becoming victims themselves, will summon appropriate resources and equipment, for example, ICS training. Local fire department, emergency center, and EMT

ambulance, and police need, and, as police and firefighters, especially, will determine, during the pre-evacuation period—after the first alarm(s) and before actual evacuation(s) begin(s)—evacuation periods using egress estimators, or hazard analysis strategy from other evacuation models. Preliminary training for each of these dimensions of first response for firefighters and for police also includes improvised explosive device (IED) awareness training, explosive device/booby trap awareness training, and, for EMTs as well, responder self-protection measures training (Chittaro & Sioni, 2015; FEMA, 2017a; Kuligowski, 2011; Lu & Xue, 2016).

Metropolitan Atlanta has recently been recalled for its stealth first response to such disaster incidents as the fire and collapse of Atlanta's Interstate 85 (I-85) bridge in March of 2017 (CBS46, 2017; Fox5, 2017). Besides the region's implementation of its Regional Evacuation Coordination Plan (RECP) for multijurisdictional collaboration on emergency preparedness for both natural and man-made disasters (ARC, 2009; Hescock, 2009).

Metropolitan Atlanta and first responder constituents have just recently received USD 8.43 million in funding from the Department of Homeland Security (DHS) for terrorism events in particular (Stafford, 2017)—funding that is reportedly sorely needed for first responder practice with mock-disaster exercises and other pre-operational activities. This study shed more light on the needs of first responders for such pre-operational traumatic event preparedness, which is just in the past years are being funded and implemented.

Problem Statement

Since the September 11 terrorist attacks on the United States, policy and public discourse on terrorism and first responders, especially law enforcement tactics, have faced substantial changes in implementation, more so as lone wolf terrorism has increased and more so as the

prevalence of (PTSD) in first responders has increased dramatically in police officers, firefighters, and emergency medical technicians (EMTs; Campbell, Langhinrichsen-Rohling, Sweeney, & Shropshire, 2015; Geronazzo-Alman et al., 2016; Motola et al., 2015). As legal definitions of terrorism and the ability of first responders to distinguish effectively between group terrorism and lone actor incidents becomes increasingly confounded, law enforcement organizations have faced significant challenges in response, ability to report on incidence levels, and effective training implementations for mass casualty events (Geronazzo-Alman et al., 2016; Holgersson, Sahovic, Saveman, & Björnstig, 2016; McCaffery, Richardson, & Bélanger, 2016; Smith, 2015).

For effective first responder emergency preparedness, management, and intervention, one of the foremost roles of the first responder is to differentiate between problems, hazards, crises, disasters, catastrophes, and emergencies (Smith, 2014) and to determine types of terrorism accordingly. This sensemaking, decision-making, and protective action (Kuligowski, 2011) depend upon clarity of terms to start (McEntire, 2004), providing a legal and practical basis for all perception, behavior, and action. However, with no definition for terrorism (Hoffman, 1998; McCaffery, Richardson, & Bélanger, 2016; Nicholson, 2010; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014), not only are theorists challenged to bring knowledge and information to bear, but first responders are challenged to distinguish group acts of terrorism from solo acts of terrorism (Geronazzo-Alman et al., 2016; Gill, Horgan, & Deckert, 2014; Holgersson, Sahovic, Saveman, & Björnstig, 2016; Landahl, 2007; McCaffery, Richardson, & Bélanger, 2016; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014; Smith, 2015; Spaaij & Hamm, 2015).

First responder emergency management protocol and procedures are challenged and the abilities to act on and report on levels of incidence are compromised (Liu, Jing, Sun, & Huang, 2014; Miraglia, 2013; Motola, Burns, Brotons, Withum, Rodriguez, Hernandez, et al., 2015; Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016; Peleg & Rozenfeld, 2015; Smith, 2015); and the capacity for conducting effective mass casualty training is undermined (Chittaro & Sioni, 2015; Liu, Jing, Sun, & Huang, 2014; Miraglia, 2013; Motola et al., 2015; Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016; Smith, 2015).

While widespread terrorism continues to make an impact on global political discourse and subsequently on emergency response protocol, lone wolf acts of terrorism and new understandings of the motivation behind these acts have resulted in changes in first responder response tactics. Following the terrorist attacks of September 11, 2001, a new National Response Plan (NRP; formerly the Federal Response Plan [Haddow & Bullock, 2005]) was developed and mandated by Homeland Security Presidential Directive (HSPD-5) (Bogucki & Schulz, 2015; Hambridge, Howitt, & Giles, 2017; Miraglia, 2013).

The new NRP, aimed at realignment of “federal coordination structures, capabilities, and resources into a unified, all-discipline, and all-hazards approach to incident management” (Miraglia, 2013, p. 35), spawned the (NIMS), an incident management framework that calls for an all-hazards multi-agency approach that is rooted in collaborative efforts held to six principle standards for (a) operational command (also based on and following specific Incident Command System [ICS] protocol, Multi-agency Coordination Systems [MACS], and public information systems [PIS] protocol); (b) emergency preparedness; (c) resource coordination, allocation, and management; (d) communications and information management; (e) supporting security-related

and other assistive technologies; and (f) continuing and contiguous management and maintenance (Bogucki & Schulz, 2015; Hambridge, Howitt, & Giles, 2017; Miraglia, 2013). The NIMS as an incident management framework for the nation is relevant at the state, regional, and local levels as well, requiring the same of first responders including police, fire, and emergency medical personnel.

However, because lone actor violence has been linked to urban geographic settings—where access to large crowds serves as primary motivation for terrorist methods, as well as motivation to directly affect law enforcement personnel, allowing for an outlet to spread politically and personally-driven terrorist messages (Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014)—law enforcement departments as well as multi-agency (law enforcement and healthcare emergency) efforts such as those in Metropolitan Atlanta face fragmentation (Kobelt, 2015; Smith, 2014; Spaaij & Hamm, 2015).

Therefore, this interpretive phenomenological study centered on the general problem of a lack of research on first responders' traumatic perceptions and on the specific problem involving the need for examining first responders, especially law enforcement protocols, first responder perceptions, and psychological influences from exposure to traumatic events. All needed to improve emergency preparedness, training implementations, and incidence rates of PTSD that have not been consistently examined (Campbell, Langhinrichsen-Rohling, Sweeney, & Shropshire, 2015; Geronazzo-Alman et al., 2016; Motola et al., 2015).

Purpose of the Study

The purpose of this interpretive phenomenological study was to examine perceptions and sensemaking, decision making, and protective action behaviors (Kuligowski, 2011) associated

with emergency preparedness for a traumatic event such as traumatic events in first responders; to do so in the context of first responders' potential for developing PTSD.

And to understand these components as they apply in the context of traumatic events in general and as they apply to first responder perceptions and behaviors associated with emergency preparedness for traumatic incidents.

Following a review of the literature using a framework of protection-motivation theory (Chittaro & Sioni, 2015; Clubb, & Hinkle, 2015; Crossler & Bélanger, 2014; Rogers, 1975; Rogers & Mewborn, 1976) and the theory of planned behavior (TPB; Ajzen, 1985, 1991; Saeri, Ogilvie, La Macchia, Smith, & Louis, 2014), micro theories including sensemaking theory (Dowding, Lichtner, Allcock, Briggs, James, Keady, et al., 2016; Garner, Baker, & Hagelgans, 2016) and decision making theory (Klein, 1997; Timmons, 2009; Wang, Zhang, & Wang, 2015), as well as a NIMS) and ICS) protocol framework (Jensen & Waugh, 2014; Jensen & Youngs, 2015).

This study documented the perceptions of sixteen first responders, including police officers and firefighters, specifically in the context of traumatic events and violent crime relevant to the Metropolitan Atlanta region. To examine how first responders perceive protocol implementation and psychological issues associated with emergency preparedness, in-depth, semi-structured interviews were used in this study.

There is a reasonable amount of literature on emergency management in general (e.g., Barbera & Macintyre, 2014; Decker, 2011; Fisher, 2015; Jensen, 2011; Kapucu & Hu, 2016; Osgood, Scanlon, Jotwani, Rodkey, Arshanskiy, & Salem, 2015). However, the literature on terrorist attack emergency preparedness and first responder perception and behaviors, in

particular, is limited (Fisher, 2015; Flynn & Speier, 2014; Hambridge, Howitt, & Giles, 2017; Jensen & Waugh, 2014; Jensen & Youngs, 2015; Jennings & Arlikatti, 2016; Luna, 2015; Reid, Brown, & Landis, 2016) and first responder PTSD as a result of terrorist events, in particular, is much understudied. There is a substantial need to study, consistently report on, and improve emergency protocols and address the significant rates of PTSD among first responders (Bergencico, Lane, Thompson, Wozny, Zajdel, Barduhn, et al., 2015; Cone, Li, Kornblith, Gocheva, Stellman, Shaikh, et al., 2015; Feder, Mota, Salim, Rodriguez, Singh, Schaffer, et al., 2016; Kotov, Bromet, Schechter, Broihier, Feder, Friedman-Jimenez, et al., 2015; Pietrzak, Feder, Singh, Schechter, Bromet, Katz, et al., 2014; Schwarzer, Cone, Li, & Bowler, 2016; Skogstad, Fjetland, & Ekeberg, 2015; Wilson, 2015).

Research Questions

In line with the purpose of the study, the following research questions were posed:

RQ1. How do first responders perceive protocol implementations in response to emergency preparedness for traumatic incidents?

RQ2. How do first responders perceive the development and treatment of psychological disorders as a result of exposure to traumatic incidents?

RQ3. How do they perceive the effect of such disorders on first responder ability to act during such emergencies?

RQ4. What role does emergency preparedness first responder training play in decision-making behaviors of first responders?

To seek answers to these questions, I used a phenomenological research design, using interviews to study the experiences, perceptions, intentions, and behaviors of 16 first responders.

With this research design, I was able to study the phenomenon the perceptions, intentions, and actions for first responder emergency preparedness by focusing on what Vagle (2016) identified as the “intentionality of the human experience: that inseparable connectedness between subjects [humans] and objects [things, ideas, constructs]” (p. 27) that creates meaning in the world. In this instance, the intentionality of the research design revealed the survival, by way of first responders, of a region in the event of a terrorist attack. The research design allowed for a deep exploration of the first responder experience as it is associated with or affected by PTSD as a result of first responder dynamic responses to the traumatic event.

Study Limitations

Some possible limitations of the study include questionable homogeneity of the sample size (Smith, Flowers, & Larkin, 2009), Some possible limitations of the study include questionable homogeneity of the sample size (Smith, Flowers, & Larkin, 2009); the findings from this study emerged from a small sample of first responders and may not be generalizable to larger populations.

Significance of the Study

Based on protection-motivation theory (Chittaro & Sioni, 2015; Clubb & Hinkle, 2015; Crossler & Bélanger, 2014; Rogers, 1975; Rogers & Mewborn, 1976) and the TPB (Ajzen, 1985, 1991; Saeri, Ogilvie, La Macchia, Smith, & Louis, 2014), micro theories including sensemaking theory (Dowding et al., 2016; Garner, Baker, & Hagelgans, 2016) and decision making theory (Klein, 1997; Timmons, 2009; Wang, et al, 2015), as well as the (NIMS) and (ICS) protocol framework (Jensen & Waugh, 2014; Jensen & Youngs, 2015), were put in place in the United States for emergency responders to traumatic events.

This study includes exploration of emergency preparedness perceptions of first responders as they have not been consistently examined in past research. Given that the purpose of this study were to examine perceptions and sensemaking, decision making, and protective action behaviors (Kuligowski, 2011) associated with emergency preparedness for traumatic events in first responders and to do so in the context of first responders' potential for developing PTSD, this study provided crucial information regarding the effectiveness of first responder protocols and the influence of psychological factors on emergency preparedness and emergency response tactics. First, by understanding the emergency preparedness perceptions of first responders, this study may be useful in developing training implementation and simulation activities.

And in bridging the gap in the literature regarding first responder training concerns. Second, this study contributed to mental health and counseling fields that could improve current programs and rehabilitation techniques relevant to first responders experiencing PTSD. Third, this study added to the literature and helped to close the gap in current studies and in turn, inform policy and protocols for first responder sensemaking, decisionmaking, and protection actions (Kuligowski, 2011) of those first responders influenced by the potential for (PTSD) in response to traumatic events in the metropolitan Atlanta region and elsewhere in the nation and around the globe.

Summary

An interpretive, phenomenological study using a theoretical framework of TPB, PMT, and sensemaking and decision making was chosen. Such a design and supportive conceptual framework were considered an optimum way to accommodate investigation of first responder

sense making, decision making, and protective action as it impacted by traumatic events that could result in PTSD. The study was intended to help close the knowledge gap on the phenomenon. It was also intended to be useful in developing training implementation and simulation activities for first responders with or without probable PTSD. It is hoped that this study contributed to mental health and counseling fields implementing interventions relevant to first responders experiencing probable PTSD.

Chapter 2: Literature Review

First responders answering the call to an emergent situation, a disaster, crisis, or catastrophic event, follow protocol and training that mandate effective emergency management sense-making, decision-making, and protective action (Kuligowski, 2011). Police officers, firefighters, and emergency medical technicians also include the requirement to have and implement strategies for emergency preparedness and to conduct effective emergency management recovery actions. Yet, first responders operating in what Al-khaldi, Austin, Cura, Dantzler, Holland, and Maples, et al. (2017) call a hyper-VUCA environment, and responding to an event of traumatic incidents, meet with potentially increased challenges when they incur and experience probable psychological disorders such as post-traumatic stress disorder, psychological disorders with symptoms that can incapacitate effective emergency preparedness and emergency management first responding.

The changing environment instigated a need for changes in emergency preparedness protocol and training prompting a need for qualitative, experiential, and psychological research. Specific research is needed to understand the effectiveness of first responder protocols and the influence of traumatic event-relevant psychological factors on emergency preparedness and emergency response tactics. However, the literature included examination that reflects a gap in the knowledge relevant to perceptions and sense-making, decision-making, and protective action (and recovery) behaviors associated with emergency preparedness for traumatic incidents such as mass shooting in first responders in the context of first responders' potential for developing PTSD. Some current research include examination of effective emergency response preparedness protocol (Barbera & Macintyre, 2014; Decker, 2011; Flynn & Speier, 2014; Hambridge, Howitt,

& Giles, 2017; Jennings & Arlikatti, 2016; Jensen, 2011; Jensen & Waugh, 2014; Jensen & Youngs, 2015; Kapucu & Hu, 2016; Luna, 2015; Osgood, Scanlon, Jotwani, Rodkey, Arshanskiy, & Salem, 2015; Reid, Brown, & Landis, 2016).

Past research included examination of barriers to emergency preparedness and capability (Crowe, Glass, Raines, Lancaster, & Waggy, 2015; Mendelson & Berg, 2016; Neal & Webb, 2006; Pfeifer, 2006; Pressman, Pietrzyk, & Schneider, 2011; Simon, Goldberg, & Adini, 2015; Wenji, Turale, Stone, & Petrini, 2015). Additionally, research included examination of lone wolf terrorism as a barrier contributing to law enforcement department and multi-agency effort fragmentation (Byman, 2014; Campbell, Langhinrichsen-Rohling, Sweeney, & Shropshire, 2015; Geronazzo-Alman et al., 2016; Kobelt, 2015; Motola et al., 2015; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014; Smith, 2014; Spaaij & Hamm, 2015).

A fair amount of research has considered to investigate the role of emergency preparedness training in first responder sense-making, decision-making, and protective and recovery action (Chittaro & Sioni, 2015; Flynn, 2016; Johanning, Auger, Morey, Yang, & Olmsted, 2014; Kulawiak & Lubniewski, 2014; Kuligowski, 2011; Lu & Xue, 2016; McEntire, 2014; Motola et al., 2015; Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016; Reid, Brown, & Landis, 2016; Smith, 2015). But only a small amount of research included investigated the influence of terrorism on first responder sense-making, decision-making, and protective and recovery actions and risk perception (Gerwehr & Hubbard, 2006; Harvell & Nisbett, 2016; Howitt, 2016; Kuligowski, 2011; Mahoney, 2010; Pfeifer, 2006; Thompson, Rehn, Lossius, & Locky, 2014); a limited amount of research conducted to investigate acts of terrorism and first responder psychological issues such as sensory overload, responder burnout, and suicidal

ideation and behavior (Smith, 2014; Stanley, Hom, & Joiner, 2016; Timmons, 2009), and disorders (Bergen-Cico et al., 2015; Cone et al., 2015; Feder et al., 2016; Garner, Baker, & Hagelgans, 2016; Geronazzo-Alman et al., 2016; Pietrzak, 2015; Pietrzak et al., 2014; Schwarzer, Cone, Li, & Bowler, 2016; Skogstad, Fjetland, & Ekeberg, 2015).

And very little research has been done to investigate emergency preparedness perceptions of first responders (Al-khadi et al., 2017; Fisher, 2015; Flynn & Speier, 2014; Hambridge, Howitt, & Giles, 2017; Jensen & Waugh, 2014; Jensen & Youngs, 2015; Jennings & Arlikatti, 2016; Luna, 2015; Reid, Brown, & Landis, 2016).

The themes uncovered by conducting a review of the literature contribute to the body of knowledge in terms of emergency preparedness in the context of events of traumatic in general, but none explicitly involved the perceptions and sense-making, decision-making, and protective action (and recovery) behaviors associated with emergency preparedness for terrorism or traumatic incidents in first responders—in the context of first responders' potential for developing PTSD in particular. Applying a protection-motivation theory (Chittaro & Sioni, 2015; Clubb, & Hinkle, 2015; Crossler & Bélanger, 2014; Rogers, 1975; Rogers & Mewborn, 1976) and the theory of planned behavior (TPB; Ajzen, 1985, 1991; Saeri, Ogilvie, La Macchia, Smith, & Louis, 2014), micro theories including sensemaking theory (Dowding et al., 2016; Garner, Baker, & Hagelgans, 2016) and decision-making theory (Klein, 1997; Timmons, 2009; Wang, Zhang, & Wang, 2015), as well as a National Incidence Management System (NIMS) and Incidence Command System (ICS) protocol framework (Jensen & Waugh, 2014; Jensen & Youngs, 2015). This study helped to bridge the gap in literature regarding first responder training concerns, mental health and counseling programs, and rehabilitation techniques relevant to first

responders experiencing PTSD, and perhaps even policy and protocol for first responder sense-making, decision-making, and protection actions of first responders influenced by the potential for PTSD in response to traumatic events in the metropolitan Atlanta region and elsewhere in the nation and around the globe.

Research Strategy for Literature Review

The purpose of this interpretive, phenomenological study was to understand (a) the role of the emergency first responder in differentiating between problems, hazards, crises, disasters, catastrophes, and emergencies; (b) the NIMS and ICS components of effective emergency management; (c) the barriers to effective sense-making, decision-making, and protective actions; (d) the pathogenic influences of traumatic events on first responders; and (e) emergency management training for and after (and because of) a traumatic event. The purpose of this literature review was to establish the themes relevant to the topic of perceptions and sense-making, decision-making, and protection and recovery actions and behaviors associated with emergency preparedness for traumatic incidents and first responders.

The following electronic databases were used in the searches: EBSCOhost, Educational Resource Information Center (ERIC), JSTOR, Project Muse, ProQuest, Sage Publications, PubMed, and MEDLINE. The articles found were published between 1970. The evidence-based literature, which comprises the majority of the research study was published between 2014 and 2017. Only articles published in the English language were included.

The keywords and keyword phrases used for searching were as follows: *emergency, disaster, terrorism, first responder disaster preparedness, first responder emergency preparedness, first responder disaster preparedness terrorism/terrorist attack, first responder*

emergency preparedness terrorism/terrorist attack, first responder emergency preparedness sensemaking, first responder emergency preparedness decision-making, first responder emergency preparedness protective action, first responder emergency preparedness perception(s), protective motivation theory, and theory of planned behavior.

Structure of the Review

This chapter begins with a discussion of the theories and sub-theories that inform and guide the study, including protection motivation theory (PMT) and TPB), and the micro theories, sensemaking theory, and decision-making theory. The chapter then consists of a review of the theoretical and evidence-based literature published to derive the themes relevant to answering the research questions regarding perceptions and sense-making, decision-making, and protective action (and recovery) behaviors associated with emergency preparedness for terrorism or traumatic incidents in first responders within the context of first responders' potential for developing PTSD.

The literature review includes a division into six sections: the first section includes discussion of the literature focused on effective emergency preparedness and emergency response protocol. The second section focuses on generic barriers and challenges to emergency preparedness and responder capability. A third section is about lone terrorism as a barrier contributing to law enforcement department and multi-agency effort fragmentation. The fourth section includes a focus on the role of emergency preparedness training in first responder sense-making, decision-making, and protective and recovery action. A fifth section specifically addresses the literature on the influence of traumatic events on first responder sense making, decision making, and protective and recovery actions and risk perception. A sixth section

includes discussion of the literature on emergency preparedness perceptions of first responders.

The chapter closes with a summary and discussion.

Theoretical Framework

The theoretical framework for this study draws on the theoretical and evidence-based literature focused on themes of effective first responder sensemaking, decision-making emergency management in first responder emergency preparedness in general. In particular, the framework involves applying a protection-motivation theory (PMT; Chittaro & Sioni, 2015; Clubb, & Hinkle, 2015; Crossler & Bélanger, 2014; Rogers, 1975; Rogers & Mewborn, 1976) and the theory of planned behavior (TPB) (Ajzen, 1985, 1991; Saeri, Ogilvie, La Macchia, Smith, & Louis, 2014) and micro theories including sense-making theory (Dowding et al., 2016; Garner, Baker, & Hagelgans, 2016) and decision-making theory (Klein, 1997; Timmons, 2009; Wang, Zhang, & Wang, 2015), as well as a National Incidence Management System (NIMS) and Incidence Command System (ICS) protocol framework (Jensen & Waugh, 2014; Jensen & Youngs, 2015).

As the protection motivation theory (PMT), the theory of planned behavior (TPB), and the micro-theories include frequent use in research to understand risk and emergency preparedness behaviors; these theoretical frameworks were guided analysis of first responder experiences regarding protocols, perceptions, and psychological influences from exposure to traumatic events. Moreover, because of the dearth of information from the perspective of first responders, behavioral influence has not been consistently conducted, and a need exists for research on traumatic preparedness guided by PMT and PBT, as well as sense-making and decision-making theoretical frameworks.

Protection Motivation Theory (PMT)

R.W. Rogers proposed protection motivation theory (PMT) in 1975 as a mechanism for examining fear coping behavior. PMT included an extension to understand fear and risk perceptions and thought processes in qualitative and quantitative research, including perceptions of victimization and threat (Clubb & Hinkle, 2015; Crossler & Bélanger, 2014). Under PMT, the postulated five crucial components make up an individual's fear appeal are the following: (a) the perceived magnitude of the noxiousness (or severity) of a depicted event; (b) the perceived probability of that event's occurrence; (c) the perceived vulnerability to the event; (d) the efficacy of a protective response; and (e) perceived self-efficacy (Rogers, 1975). Figure 2 illustrates.

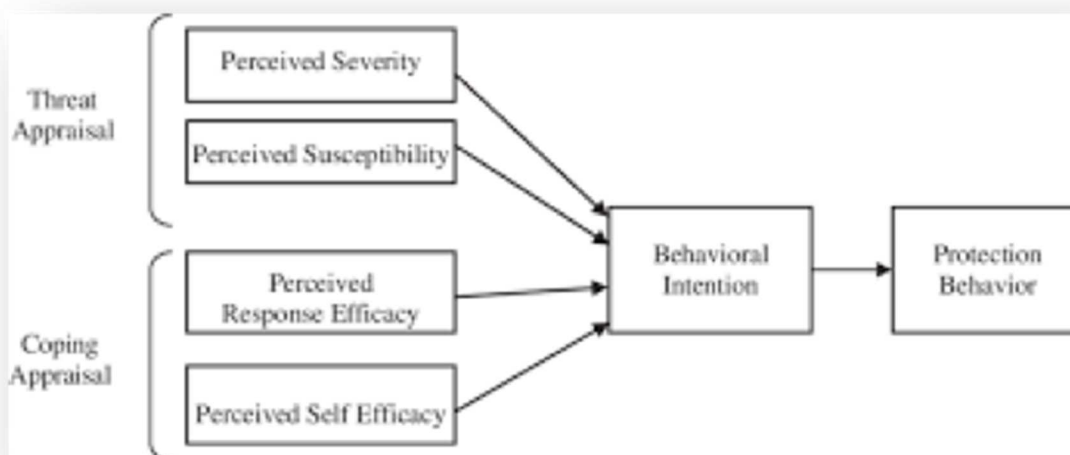


Figure 2.

From “protection motivation theory” by R. W. Rogers, a protection motivation theory of fear appeals and attitude change, 1975, *Journal of Psychology*, 91, p.93-114.

. Each of these communication variables initiates corresponding cognitive appraisal (or sense-making) processes that mediate attitude change (Rogers, 1975).

According to PMT, in the event of a threatening situation (disaster or emergency), the cognitive mediating process includes the basis upon the source(s) of information received, influenced by subjective norms and by subjective normative beliefs. Moreover, which is undergone by way of one or more coping models will result in an adaptive response or a maladaptive response to the impending threat (Rogers, 1975). This cognitive mediating process (later investigated as sense-making) begins with receiving and evaluating information sourced from (a) an environmental source or sources and verbal persuasion and/or from (b) intrapersonal dynamics, influenced by personal and interpersonal beliefs, prior experience, and observational learning (Clubb & Hinkle, 2015; Crossler & Bélanger, 2014; Rogers, 1975). As a person use the information to take action, by way of a coping mode, the threat appraisal process and the coping appraisal process mediate the application of a response (Chittaro & Sioni, 2015; Clubb & Hinkle, 2015; Crossler & Bélanger, 2014; Rogers, 1975).

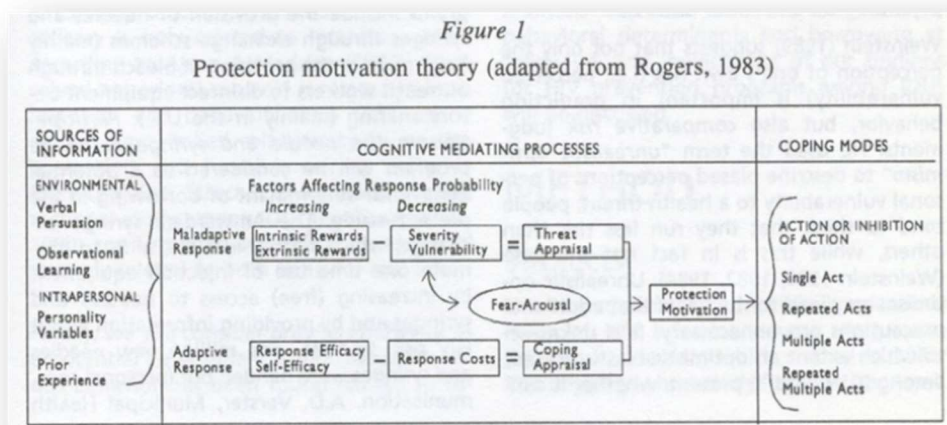


Figure 3.

From “protection motivation theory” by R. W. Rogers, A protection motivation theory of fear appeals and attitude change, 1975, *Journal of Psychology*, 91, 93-114.

Perceptions and experiences of first responders related to traumatic events can be examined using PMT processes of threat response and solution-oriented behaviors. In the threat appraisal process, the individual perceives the vulnerability and severity of a threat. During the coping appraisal phase, threat solutions or actions, the ability to perform actions (self-efficacy), and action-worthy (perceived cost) are examined (Clubb & Hinkle, 2015). In studies on PMT and emergency preparedness, interpretations of protective behaviors indicate a range of beliefs and embodied perceptions of risk (Crossler & Bélanger, 2014; Enander, Hede, & Lajksjö, 2015; Pesiridis, Sourtzi, Galanis, & Kalokairinou, 2015; Westcott, Ronan, Bambrick, & Taylor, 2017).

For example, research by Clubb and Hinkle (2015) addressed the use of protection motivation theory (PMT) to understand criminal threats and protective responses. Further describing the development of protection motivation theory and how the theoretical framework can be used to understand cognitive processes, the researchers noted that constrained behaviors in first responder responses to crime have frequently been explained as predictors of fear. Research specific to emergency management and emergency preparedness in response personnel (e.g., Enander, Hede, & Lajksjö, 2015; Pesiridis, Sourtzi, Galanis, & Kalokairinou, 2015; Westcott, Ronan, Bambrick, & Taylor, 2017) mentioned such findings by extending protection motivation theory. For instance, Westcott, Ronan, Bambrick, and Taylor (2017) explored the use and expansion of PMT used to inform and improve public safety strategies in natural hazards in Australia. Westcott et al. found the theory useful for Emergency Services' public education campaigns to inform coping actions in the face of perceived public threat.

Pesiridis, Sourtzi, Galanis, and Kalokairinou (2015) conducted a study extending PMT for the development, implementation, and evaluation of an educational program for nurses

regarding the provision of health care during disasters, given the premises of PMT that hold that knowledge informs intentions and confidence levels. However, In my opinion, a lack of knowledge exists on constrained behaviors and protective measures in first responders, and this information is crucial to improving training and responses to criminal threats. Crossler and Bélanger (2014) investigated cyber threats to individual security through an extended PMT lens. Expanded theory to close the research gap and discussing the focus of several other studies to examine specific risk determination behaviors rather than several collective risk determination behaviors. Similarly, as perceived vulnerability decreased, participant security safety increased. Though their study includes the focus of cyber threats, the information is useful in understanding the use of protection motivation theory to understand processes undertaken when law enforcement agencies and civilians include exposure to online threats regarding decisions on security behaviors.

The Theory of Planned Behavior (TPB)

The TPB, developed by Icek Ajzen in 1985, was also used in this study because of the focus on examination processes that produced behavioral change by linking beliefs to behaviors (Ajzen in 1985, 1991; Saeri, Ogilvie, La Macchia, Smith, & Louis, 2014). The theory of planned Behavior further provided a framework for understanding subjective norms to include injunctive norms, what individuals approve or disprove of, and descriptive norms, what individuals do (Ajzen in 1985, 1991; Saeri et al., 2014). According to the TPB, an individual's attitude, societal subjective norms (what the society deems is appropriate, right, moral, just, etc. behavior), an individual's normative beliefs (the extent to which the individual's normative beliefs align with society's), and an individual's perceived behavioral control (the extent to which the individual

believes he/she has control) influence that individual's intentions; in turn intentions influence behavior (Ajzen in 1985, 1991; Saeri et al., 2014; see Figure 4).

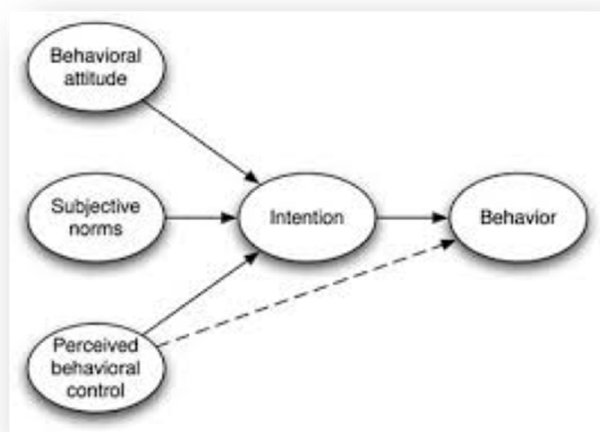


Figure 4.

From “theory of planned behavior” by I Ajzen, 1985 in B. Author (Eds.), *Action control* (pp. 11-39). Heidelberg, Germany: Springer Berlin.

A passel of research conducted utilizing the TPB (e.g., Kautonen, Gelderen, & Fink, 2015; Koropp, Kellermanns, Grichnik, & Stanley, 2014; Montano & Kasprzyk, 2015; Saeri et al., 2014; Zemore & Ajzen, 2014) revealed that behaviors can be predicted based on attitudes and intentions. Research specific to emergency management and emergency preparedness in response personnel, as well as in private citizens similarly addressed such findings by extending the theory of planned behavior (e.g., Ejeta, Ardalan, & Paton, 2015; McLennan, Cowlshaw, Paton, Beatson, & Elliott, 2014; Prasanna & Huggins, 2016; Trigg, Thompson, Smith, & Bennett, 2015).

For instance, McLennan et al. (2014) studied Australian householders' strengths of intentions to self-evacuate if a wildfire threatens by extending both PMT and TPB. McLennan et al. determined that TPB could be more useful predictor than PMT of the strength of intention to evacuate before it was too late. While householder perceptions of severity and susceptibility to threat were not significant contributors to timely evacuation, householder efficacy and self-characterization were important contributors in predicting the strength of intention to evacuate.

Trigg, Thompson, Smith, and Bennett (2015) also investigated pet-owner relationship characteristics as a means of describing risk-preparedness foci and risk propensities within disaster contexts, using TPB to understand the range of archetypal differences in intention and for reframing disaster risk and preparedness communications by increasing pet owners' receptivity to, and cognitive involvement with, message content. More relevant to this study, Prasanna and Huggins (2016) used TPB, as well as the theory of acceptance (TAM) model, to investigate the factors of acceptance by emergency managers of emergency operations center information systems. Prasanna and Huggins (2016) found an acceptance rate of 86% and also discovered several acceptance factors driving adoption behaviors for effective emergency management to include a mediating component, of performance expectancy, which explained nearly half (49%) of emergency management intentions.

Ejeta, Ardalan, and Paton (2015) also conducted a systematic review of the literature to investigate the application of such theories as TPB, to studies of emergency and disaster preparedness at the individual, community, and organizational levels. They found several such studies applied to an investigation into disease outbreak preparedness, influenza (H1N1 and H5N1) outbreak preparedness, flood preparedness, and earthquake hazards preparedness, though

none of the studies which ones investigated beyond relationships between constituent variables to the pathways that could be analyzed to determine interdependence relationships between the constructs described. However, additional factors, such as fear of crime and trust, as also accommodated by PMT instead, can also provide predictive information useful for understanding first responder perceptions and experiences with terrorism incidents (Saeri et al., 2014).

The Micro-Theories

As extensions of PMT and TPB, two sub-theories or, micro-theories, include usefulness in understanding first responder emergency preparedness, including sense-making theory (Dowding et al., 2016; Garner, Baker, & Hagelgans, 2016) and decision-making theory (Baumgart, Bass, Philips, & Kloesel, 2008; Klein, 1997; Timmons, 2009; Wang, Zhang, & Wang, 2015).

Decision-making theory. As a micro-theory applied in this study, decision-making theory can be applied in the context of this study to explore how emergency first responders make decisions in the face of an event of traumatic. Management, emergency management, and decision sciences developed a wide range of decision-making theories, but emergency decision-making is informed by general decision-making principles (Timmons, 2009) as well as operational components for rapid or emergency decision making (Klein, 1997; Wang et al., 2015). Rapid or emergency decision-making is required of the first responder in what is typically a life or death, security, or loss context.

For instance, Klein (1999) explained a study that found that for any singular emergency incidence, fire department commanders would have to adjust to the changing, dynamic conditions that warrant rapid decisions made in response to an average of five situational

changes. For EMTs in emergent situations involving severe weather, storms, tornadoes, and flooding, Baumgart, Bass, Philips, and Kloesel (2008) developed a descriptive decision-making model of EM information use and decision-making that finds the imperative for a multitude of decisions required during four phases (with decisions accompanied by requisite actions): during the Pre-Storm phase, emergency management decisions must include determining the likelihood of severe weather occurring within the local area and determining whether or not to contact spotters and first responders. During the Severe Weather Watch phase, emergency management decisions must include deciding where and when to deploy spotters and determining when/if to notify other first responders (p. 1269). During the Severe Weather Warning phase, emergency management decisions must include deciding likely location of severe weather within the local area, deciding whether or not to sound the siren (warn public), and deciding whether or not to interrupt cable television (p. 1269). During the Severe Weather Event phase, emergency management decisions must include deciding when to turn off sirens (p. 1269).

Decision-making theory applied to this study includes the crucial decisions that must be made by these agencies, including police departments, fire departments, and emergency medical services, during the phases of an attack of terrorism (FEMA, 2017a). However, studies such as those by Wang et al. (2015) emphasized that neglect of information and denial of the psychological state of decision makers are equally important factors that must be engaged into serious consideration. This study applied PMT and the TPB while accessing decision-making theory but also sense-making theory spotlighted the otherwise understudied variables that go into first responder perception(s), decision-making, sense-making, and protective actions.

Sense-making theory. According to Dowding et al. (2016), sense making theories accommodate an understanding of and acknowledge human cognition operating on an individual basis and organizational culture interaction between or among two or more of these individuals as such interactions impact each individual's cognition, perception, attitude, and/or behavior(s). The process of sense-making, according to Dowding et al., is characterized by the social or organizational cultural cues that are processed by the individual by way of noticing itching a signal "among the noise of the many" (p. 19), and bracketing isolating a cue or signal and interpreting based upon human experience(s) in the pair or group context. As a micro-theory was useful in this study, sensemaking theory, an extension of decision-making theory (Dowding et al., 2016), can also be applied in the context of this study to explore how emergency first responders make decisions in the face of an event of traumatic incidents.

This decision-making process includes the foundation on the general understanding that "the private trauma can lead to unhealthy patterns in their psychological sense-making of the world, and in the patterns of interaction within the responders' personal, work, and social lives" (Garner, Baker, & Hagelgans, 2016, p. 182). As do both TPB and PMT, sense-making theory includes a foundation in the understanding that an individual's (in this study, a first responder's) cognition, as well as the action and interaction of the individual in the context of the agency, organization, or culture, are significant influences on the individual's behavior(s) or action(s) (Dowding et al., 2016). In this respect, decision-making and sense-making theory support an understanding of emergency decision-making for first responders in the event of traumatic incidents. According to FEMA (2017a), and based upon NIMS and CIS protocol, emergency decision-making in response to a terrorist attack involves five major steps:

1: Identifying, Defining, and Analyzing the Problem.

2: Exploring Alternatives.

3: Selecting an Alternative.

4: Beginning Action Planning.

5: Evaluation.

- At Step 1, the emergency decision maker begins by identifying, defining, and analyzing the problem, using a checklist to distinguish new from ongoing problems, clarity and precision of statement of the problem, any valid or invalid assumptions the emergency decision maker is making the problem, whether the problem can be restated to improve clarity. To reduce or eliminate false assumptions, what needs to be known compared to what is known about the particulars of the problem, whether there are any precedents or rules about other procedures that apply to the problem and if so, what they are, what other information is needed to analyze the problem, whether it is possible to interpret the facts differently, whether different assessment and interpretation would change how the problem is solved, and who should make the decision about the final solution to that problem.
- At Step 2, the emergency decision maker begins exploring alternatives, accounting for any political factors, safety factors, financial factors, environmental considerations, and ethical factors that might influence or limit decision-making.
- At Step 3, the emergency decision maker begins selecting an option from the available, previously decided upon solution options, accounting for the same potentially limiting factors considered in Step 2.

- At Step 4, the emergency decision maker begins action planning, Step 4 begins action planning by using a checklist that takes into consideration whether the decision be implemented as is or following modification(s), whether the decision fits the problem and conditions specified in steps 1 through 3, whether the chosen alternative is still the best option, what side effects or consequences might result because of this decision, who will be responsible for enacting the solution, whether the solution goals, strategies, and tactics are clear and in place and if not what dimensions need clarifying or revision, what specific actions will serve as the solution, and in what order they need to be completed, what resources will be needed to carry out the decided-upon solution, and what the schedule or timetable is for implementation of each step in the process of taking action.
- At Step 5, the emergency decision maker begins evaluating the situation, applying six points for analysis: how the emergency decision maker will know if the proposed decision is a successful one; whether it is measurable, and if so, how; whether the solution, decision, and action plan make use of proper communications channels to ensure clarification and get feedback; whether the feedback checks the effectiveness of the solution, decision, and action plan; whether the feedback will be adequate in the event of changing circumstances and conditions that might elicit revisions to or modifications of the action plan; whether the solution is meeting its intended goal(s); and whether timely information is being made so that it can be provided to operational, administrative, and policy units in the jurisdiction. These bullet points need to be rewritten and reviewed for paraphrasing.

In conducting this qualitative, interpretive phenomenological study by applying PMT and the (TPB) while accessing decision-making theory, but also sense-making theory to spotlight the otherwise understudied variables that go into first responder perception(s), decision-making, sense-making, and protective actions, the researcher offers a composite emergency first responder theoretical framework that can be demonstrated in the following model. (see Figure 5).

SENSEMAKING DECISION MAKING

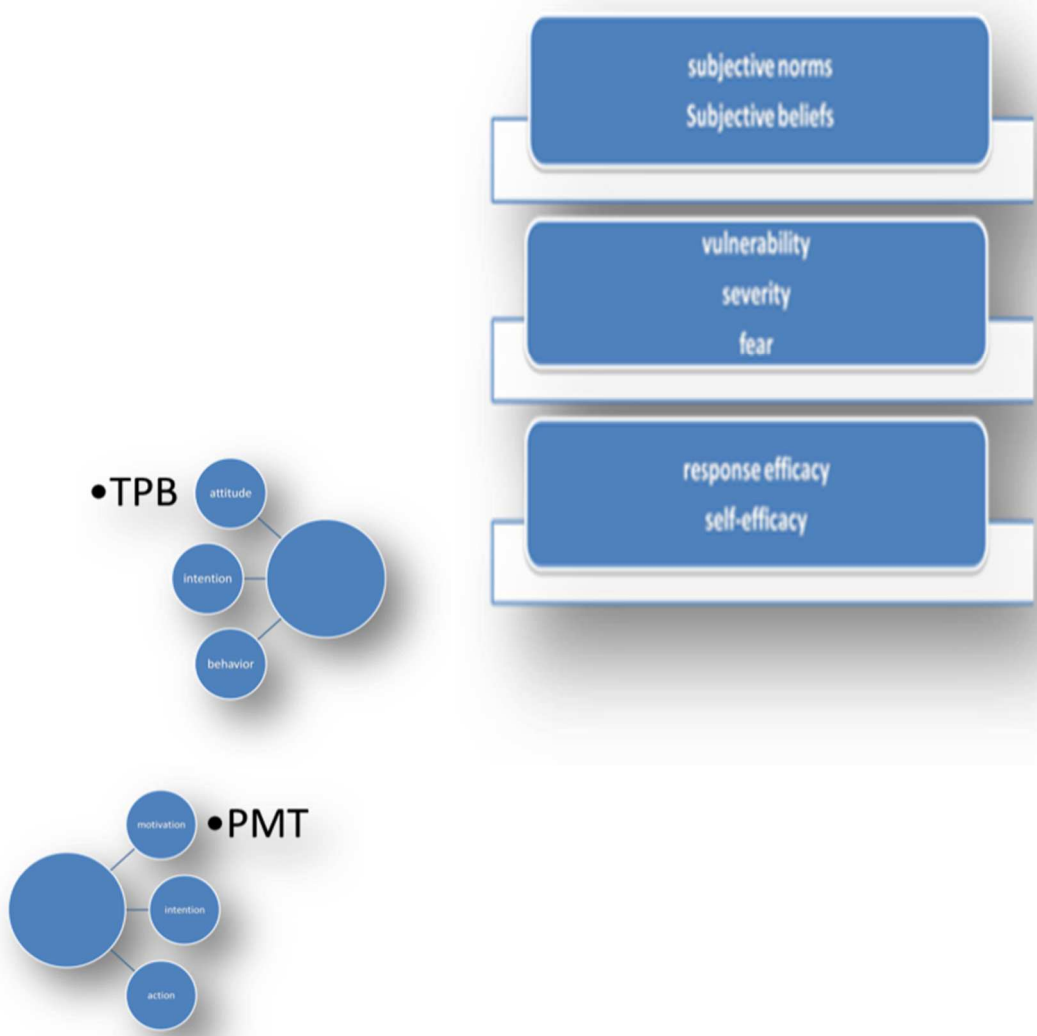


Figure 5. First responder sense making, decision making, protective action model. Olatunji (2017).

It seems to follow that based on the theoretical literature, a) attitude and motivation, intention, and behavior or action are influenced by subjective norms and subjective beliefs; vulnerability, severity, and fear; and response efficacy and self-efficacy latter, and influencing the former

Forming the basis for the themes relevant to this study, the theoretical and research-based literature lend to the following themes: a) effective emergency preparedness and emergency response protocol (Decker, 2011; Flynn & Speier, 2014; Hambridge, Howitt, & Giles, 2017; Jennings & Arlikatti, 2016; Jensen, 2011; Jensen & Waugh, 2014; Jensen & Youngs, 2015; Liu, Jing, Sun, & Huang, 2014; Mehta, Greer, Dootson, Christensen, Duncan, Stickley, & Tippett, 2014; Peleg & Rozenfeld, 2015; Sheeran, Harris, & Epton, 2014); (b) generic barriers and challenges to emergency preparedness and responder capability (Crowe, Glass, Raines, Lancaster, & Waggy, 2015; Holgersson, Sahovic, Saveman, & Björnstig, 2016; Kobelt, 2015; Lee, 2016; Mendelson & Berg, 2016; Pfeifer, 2006; Power & Alison, 2017; Pressman, Pietrzyk, & Schneider, 2011; Wenji, Turale, Stone, & Petrini, 2015); (c) lone wolf terrorism as a barrier contributing to law enforcement department and multi-agency effort fragmentation (Byman, 2014; Gill, Horgan, & Deckert, 2014; Pantucci, Ellis, & Chaplais, 2016; Phillips, 2014; Spaaij & Hamm, 2015); (d) the role of emergency preparedness training in first responder sense-making, decision-making, and protective and recovery action (Chittaro & Sioni, 2015; Decker, 2011; Flynn, 2016; Johannig, Auger, Morey, Yang, & Olmsted, 2014; Lu & Xue, 2016; Motola et al., 2015; Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016; Timmons, 2009); (e) the influence of terrorism on first responder sense-making, decision-making, and protective and recovery actions and risk perception (Holgersson, Sahovic, Saveman, & Björnstig, 2016; Pedersen, Gjerland, Rund, Ekeberg, & Skogstad, 2016); and (f) acts of terrorism and subsequent psychological issues and disorders in first responders (Bergen-Cico et al., 2015; Clubb & Hinkle, 2015; Cone et al., 2015; Feder et al., 2016; Geronazzo-Alman et al., 2016; Gerwehr & Hubbard, 2006; Smith, 2014; Wilson, 2015).

Effective Emergency Preparedness and Emergency Response Protocol

For emergency preparedness and crisis management, it is the responsibility of the first responder to anticipate, respond, and recover (McGlown & Robinson, 2011; Miraglia, 2013). However, more specifically, effective emergency preparedness requires a multi-pronged protocol for sense-making, decision-making, and protective action by emergency first responders. Besides legal and ethical compliance for behavioral, mental health and decision-making in disaster response (Flynn & Speier, 2014), the research points to the criteria established by NIMS (FEMA, 2017b). Peleg and Rozenfeld (2015) examined the use of systematic approaches and first responder experiences to understand such emergency preparedness protocol implemented in response to terror-related mass causality events. Providing a description of terror-related attack characteristics, the authors offered ways in which control, communication, and organization, command, and coordination protocols can be developed to establish more effective responses. Also noting that research is needed passive to determine best practices and courses of action relevant to unique geographic locations, the authors work focused on the requirements by the NIMS, and CIS(FEMA, 2017b), requiring a full implementation of all incident response resources and an exercising of a long with common terminology, modular organization, emergency management by objectives, and reliance on an incidence action plan (IAP) an established chain of command and unified command, manageable span of control, pre-designated incident locations and facilities, resource management, information and intelligence management, integrated communications, transfer of command, accountability, and mobilization (FEMA, 2017b).

Command and Control

Decker (2011) studied the command and control system in particular, under the newly developed Command Incidence System (CIS) of NIMS, who further elaborated on the common and uniform command system developed under the auspices of NIMS and known as of this writing as CIS (FEMA, 2017a). The researcher focused on the CIS to investigate the extent to which 728 emergency response agencies and organizations in the state of Ohio including fire departments, law enforcement, emergency medical services, emergency management, bomb squads, hazardous materials teams, public health, and public works had accepted and implemented the command system and the perceived relevance of training for such emergency preparedness. Decker (2011) found that the fire service and public health were the most accepting of and engaged in the new command system and that third most accepting and engaged was law enforcement, although, the researcher reported, law enforcement has yet to be 100% on board with CIS.

Coordination and Organization

Hambridge, Howitt, and Giles (2017) investigated coordination and organization as necessary components of effective emergency response for, in particular, transportation. Informed by the framework of NIMS and CIS (FEMA, 2017b), they further examined the likelihood of surface transportation agencies, as second circle emergency responders develop the coordinated organizational capabilities required to fit effectively into NIMS. Depending upon the disaster(s), they found not enough time existed to implement the NIMS in some instances, such as in the instance of Hurricane Katrin, and in other instances, implementation had been problematic. They followed through by investigating the factors influencing implementation of

the NIMS (including the sub-factors, coordination, and organization), including those that require cooperation, collaboration, and compliance, as well as consistency and customization (which amounted to a diversion of resources).

Communications

Communications as a vital component of effective emergency response were studied by Liu, Jing, Sun, and Huang (2014) as counter-terrorism emergency communication in urban areas. In particular, they examined the effectiveness of communication responses in improving first responder ability to access information promptly and to respond to terrorism or traumatic incidents. They noted that network mechanisms and simulation training could be used to improve first responder performance in threat situations and added a further description of the development of simulation methods and the ways in which the implementation can be used to understand how first responders make decisions and determine courses of action. As was the emphasis of the study, they concluded that the use of the TD-LTE network has the potential to provide effective strategy implementations during traumatic events.

Mehta et al. (2014) also investigated communication, as a contingency for making smart decisions during natural hazard emergencies. They further provided an analysis of emergency communication protocols used for responding to mass causality events and informed by protection motivation theory. The research resulted in a set of crucial steps toward a preliminary typology for future studies of compliance and non-compliance. They determined that compliance and non-compliance were dependent upon different situations and variables, including demographics, personality, social identity, self-concept, self-efficacy, and past experiences. Despite that the studies focus was at examining first responder responses to natural hazards, this

information remains useful in understanding the factors influencing best practices compliance with emergency management policies and use of communication strategies in processes undertaken when making decisions in high-risk environments. Relevant to this study, the research by Mehta et al. (2014) yielded results that revealed that assumptions and practices based on threat determinations examined were significantly associated with complying to instructions issued by governmental agencies, communication campaigns influenced by intuition rather than evidence-based reasoning, and linear and directional communication tactics.

Lee, Walters, Borger, Clem, Fenati, Kiemeney (2016) also studied communications as a vital component of the effective emergency response. They focused on providing a detailed analysis of the communication (s) methods used by first responders to respond to mass casualty events following the San Bernardino, California attacks of December of 2015. Specifically, they expanded on the responsiveness of the trauma centers in the region and discussed first responder tactics to address the significance of coordinated response during mass casualty events. They found that teamwork, coordination, and prior training in first responders had a significant effect on the ability to mobilize staff and resources quickly. However, they stated that communication difficulties and crowd-control issues experienced during the attack made for barriers to effective emergency response.

Sheeran, Harris, and Epton (2014) described correlational data on risk appraisals to develop an understanding of intentions and behaviors associated with first responder emergency event responses. This study examined four elements of risk appraisal, including risk perception, anticipatory emotion, anticipated emotion, and perceived severity. They examined influence outcomes to provide better response tactics with knowledge of response efficacy and self-

efficacy measures relevant to first responder behaviors. Findings indicated that a better understanding of risk appraisal intentions and behaviors is needed to improve first responder behavioral implementations.

In terms of effectiveness of implementation of the NIMS as best practices of emergency preparedness and disaster response, a study by Jensen (2011) surveying 355 randomly selected county emergency managers across the United States found that

NIMS may be limited in its usefulness as the foundation for our nationwide emergency management system as well as its potential for use in large-scale disaster situations because of the wide variation in the manner in which NIMS is currently being implemented in counties across the United States (n. p).

Jensen and Waugh (2014) expanded upon that the study, determined an inconsistent use of the ICS of NIMS, and emphasized the need for further research. Expanding investigations even more, Jensen and Youngs (2015) probed the components of the NIMS to determine other factors influencing effective emergency response preparedness in general and NIMS implementation behaviors of states and counties. They found that three key factors influence the intended implementation of NIMS and the actual implementation behavior: (a) NIMS-related policy characteristics, (b) emergency preparedness and response implementer perceptions, and (c) the measure of local capacity to implement NIMS. In addition to the requisite NIMS components, acceptance, and compliance as affecting effective emergency response, Jennings and Arlikatti (2016) studied other elements and factors such as acceptance of decision-making technology contributing to effective decision-making. They acknowledged the benefits of emergency management decision-support software (EMDSS) to help reduce time in decision-making,

increase interoperability, and offer real-time data management for effective disaster response and investigated further to determine the extent to which acceptance of the technologies by emergency management officials contributed to effective emergency response. Collecting data from the survey of county emergency management agencies conducted by the National Center for the Study of Counties, the researchers found that an in-place lead county emergency management official with higher qualifications and an in-house geographic information system division support acceptance of emergency management decision-support software, which in turn support(s) best practices emergency response.

Generic Barriers and Challenges to Emergency Preparedness and Responder Capability

In general, communication issues, resource allocation, lack of funding, lack of specialized resources in particular geographic locations, lack of experience, and organizational difficulties are often considered passive barriers to effective and timely first responder response actions in the case of a mass casualty event (Holgerson, Sahovic, Saveman, & Björnstig, 2016; Kobelt, 2015; Lee, 2016). In particular, several more challenges confront the emergency first responder. Mendelson and Berg (2016) identified challenges to a timely response, including being able to locate a bystander responder in time and response time delay because of the fragmented nature of the 9-1-1 emergency response system, “with different localities employing different technology and executing different emergency response plans” (p. 11).

A similar study by Pfeifer (2006) concluded that organizational bias toward group self-interest considered a major impediment to emergency response during the WTC attacks in 2001, negatively impacts complex commanding incidents in three ways: (a) by way of resistance to a single incidence commander, (b) by way of development of blind spots in command capacity;

and (c) by way of a diffusion of personal command responsibility (p. 307) all of which become antithetical to the components of the NIMS doctrine. Wenji, Turale, Stone, and Petrini (2015), investigating region-specific emergency nursing challenges following natural disasters earthquakes in China discovered profound challenges experienced by emergency staff that included cultural differences and lack of medical equipment, as well as earthquake aftershocks.

Pressman, Pietrzyk, and Schneider (2011) studied communications breakdowns between first responders and the recipients of emergency rescue. Pressman et al. identified the potential causes as including new and/or chronic speech and/or comprehension difficulties, medical problems, language barriers with non-native speakers, and cultural barriers, among others, list them, cannot be vague here. These, in turn, the first responder is imperative to assess needs and administer care accordingly. More specific to the core of this study, Crowe, Glass, Raines, Lancaster, and Waggy (2015) investigated mental illness stigma in first responders as compared to the general civilian population by coding categories of stigma. The researchers discovered that for first responders, the most frequently occurring categories of stigma included discrimination, disbelief, loss of status, and shame. Of particular concern for the first responders participating in the study was a loss of status, which, the researchers concluded, suggested likely stigma impacts first responders differently from the general population, given the unique characteristics of the emergency response profession.

In addition, Power and Alison (2017) investigated challenges to decision-making. Using the Critical Decision Method to interview 31 first response commanders from the Police ($n=12$), Fire and Rescue ($n=15$), and Ambulance Services ($n=4$) in the UK. The researchers found nine core challenges to incident command relating to the perceived characteristics of the incident

itself and relating to uncertainties about personal and interpersonal dynamics of the first responder team(s). In the category relating to the perceived characteristics of the incident itself, the researchers identified lack of information, too much information, lack of resources, unreliable resources, perceived time pressure, administrative demands, public inside or outside the risk area, potential social media criticism, reduced capacity and increased demand, and emotional demands including hopelessness and fear as challenges to first responder command decision-making. In the category relating to uncertainties about personal and interpersonal dynamics of the first responder team(s), the researchers identified insufficient updating, miscommunication, external updating of the responder's role, internal understanding of the responder's role, distrust, mistrusted intentions, a trust paradox, intra-agency command competition, v primacy, and personalities and egos as challenges to first responder command decision-making.

Lone Terrorism as a Barrier Contributing to Law Enforcement Department and Multi-Agency Effort Fragmentation

By its very nature, terrorism has disruptive and fragmenting powers (Byman, 2014; Geronazzo-Alman et al., 2016). As a disaster, a terrorist attack ironically influences the very organization, order, command, control, and communication dimensions of a society and likewise influences the agencies responding to the disaster. Lone actor or lone wolf terrorism is no exception. According to Pantucci, Ellis, and Chaplais (2016), lone actor terrorism included discussion in particular, and the difficulties law enforcement agencies face in addressing the phenomenon. The authors argued that terrorism occurs in waves and terror crimes, though they may seem to be on the rise, actually occur more frequently with increased public perceptions of

threat. It is not always clear when lone actors are truly acting alone or without any outside influences, and current definitions of terrorism can be confounded, as a result. For instance, differences between violent acts by stand-alone individuals and terrorist attacks can be difficult to distinguish. The authors concluded that little information exists on law enforcement tactics and experiences, as well as the impact of Internet sites on terrorism acts, information that when available will lend to increased insight into the affects on a first responder agency.

Gill, Horgan, and Deckert (2014) offered information relevant to the impact of lone actor terrorism. The researchers examined sociodemographic network characteristics and lone actor terrorist behaviors to analyze distinguishable behavioral differences observed in the subgroups. Their data revealed that factors including gender, age, social characteristics, education, employment, military experience, criminal activities, and mental health had an effect on violent intentions in terrorists. The researchers noted that outsider knowledge of an individual's grievances, extremist ideologies, and intentions to engage in violence is common and likewise concluded the need for more research to address the phenomenon of lone actor terrorism.

Spaaij and Hamm (2015) also investigated lone actor terrorism events in general and the use of sports events to target terroristic activities in particular and investigated how law enforcement agency responses are challenged in turn. Contextualizing their discussion with details of the societal impacts of terrorism events as well (notably, the Atlanta Olympic Games attack, one of the largest-scale terrorist attacks to be carried out by a lone actor), the authors noted that law enforcement responses to lone actor traumatic events might differ from other terrorist crimes because of different motivations and characteristics. However, they concluded, distinguishing between lone actor and group terrorism events and developing adequate protocols

can be challenging for law enforcement personnel. In support, Phillips (2014) described the current information available on lone wolf terrorism and characteristics of lone wolf actor methods to provide a comprehensive analysis of terror attack methods that can be useful for first responders and law enforcement organizations. The author used geographic profiling, game theory, and prospect theory to investigate the motivations behind terror acts and to assist in developing a more consistent definition and mechanism for distinguishing lone actor terrorism from group terrorism.

Role of Emergency Preparedness Training in First Responder Sense-Making, Decision Making, and Protective and Recovery Action

According to Decker (2011), “the more traditional first response organizations, including law enforcement, fire service, and emergency medicine, have made concerted efforts to train personnel in the NIMS and ICS principles” (p. 225). As authorities such as Pedersen, Gjerland, Rund, Ekeberg, and Skogstad (2016) and Timmons (2009) asserted, is imperative, as training, increased emphasis on standardized incident management principles and every day-work-experience must be of central concern when preparing rescue workers for disaster and recovery. Indeed, whereas lack of training is a liability for first responders (Johanning, Auger, Morey, Yang, & Olmsted, 2014), improved protocols and training techniques for first responders, including scenario activities, online simulations, and role-playing activities, have a substantial impact on the perceived self-efficacy and decision-making capabilities of first responders (Campbell, Langhinrichsen-Rohling, Sweeney, & Shropshire, 2015; Chittaro & Sioni, 2015; Liu, Jing, Sun, & Huang, 2014; Motola et al., 2015; Peleg & Rozenfeld, 2015; Smith, 2015).

A study by Bruno (2016) found in favor of particular models for risk assessment training. For example, while the researchers determined that risk assessment methodologies including the Maritime Security Risk Analysis Model (MSRAM), the CARVER matrix, and Operational Risk Management (ORM) have been designed with clear, concise steps for training, the MSRAM broadly meets Department of Homeland Security criteria for “being complete, reproducible, documented, and defensible” (p. 3). This suggested model is consistent with the Government Accountability Office (GAO) and the National Infrastructure Protection Plan (NIPP) risk frameworks, and it also meets risk management criteria and evaluation standards put forth by the Homeland Security Risk Management Doctrine.

Motola et al. (2015) conducted a study to examine effective training and first responder response methods during terrorism incidents specifically examining mobile, just-in-time training implementations to provide first responders with knowledge of the scenarios and weapons used. The study revealed that the training method was more successful in terms of intervention protocols than the control group. Bruno (2016) analyzed the current risk assessment methodologies and the impacts of the Bruno Method on first responder behaviors and response tactics. The author further described the development of training implementations and the ways in which the implementations can be used to understand risk mitigation and resilience. Findings included that resource allocation and funding had an impact on risk management strategies and implementations during mass casualty events. However, the Bruno Method includes success in addressing hazard identification, threat, preparedness, debriefing, and follow-up as well. Chittaro and Sioni (2015) analyzed emergency preparedness and the impact of simulation training activities on improving threat appraisal and first responder responses during simulated mass

causality events. The results of the study indicated that training outcomes based on risk severity perception and self-efficacy examined in the study improved with the training implementation, and the researchers concluded that responses during mass casualty events could be enhanced through the use of simulation training activities. Flynn (2016 specifically studied mindful training as a way to enhance decision-making. Identifying a need for improvement in first-responder crisis decision-making, the researcher investigated the worthwhile value of mindfulness training in the areas of first responder operations, crisis decision-making, and mindfulness training. According to the researcher, the research evidence supports the conclusion that mindfulness training may be one way in which first responders can improve their capacity to make effective decisions during a crisis.

In a similar study to examine training to support decision-making, Lu and Xue (2016) proposed that first responders do not receive sufficient training in and lack the necessary expertise to perform the difficult task of sense-making, an inherent component of the NIMS. The authors determined that while first responders are

first and foremost trained to deal with emergencies by initiating action that limits human suffering and economic damage” (p. 425), [because crises such as terrorist attacks are] “increasingly [crossing] functional and geographical borders, the management of a crisis can very soon become complex that key information flows in both vertical and horizontal directions. (p. 425).

Training for sense-making for first responders, the authors concluded, is one imperative lesson to be learned.

Influence of Terrorism on First Responder Sense-Making, Decision-Making, Protective and Recovery Actions, and Risk Perception

A significant challenge to sense-making, decision-making, and protective action perceptions and behaviors are, again in the most paradoxical sense, terrorism. Pedersen, Gjerland, Rund, Ekeberg, and Skogstad (2016) examined the effectiveness of preparedness, exposure, and role clarity in providing contextual information regarding organizational operations in mass casualty events and disasters. The authors found that having more work experience, having previous training, or having exposure to fatal events were associated with role clarity, perceptions of control, and perceptions of success.

A study by Smith (2015) examined risk perceptions and willingness of first responders to respond to terrorist attacks during the 9/11 World Trade Center attacks. Though this study focuses on EMTs and paramedics, he provides valuable insights on perceptions of health and safety, communication issues, the need for accurate and timely information, and issues with suitable training and education relevant to crime response. The participants in the study reported that their concerns with maintaining personal safety and honoring their duties shaped their continued willingness to assist in emergencies. The results of this qualitative case study revealed that first responders play a significant role in not only ensuring public safety but also providing a sense of ease for the public in the case of a traumatic event.

In addition, in a region-specific study of emergency preparedness in response to terrorism, Holgersson et al. (2016) collected data from police, rescue, and ambulance services affiliated with Swedish emergency organizations. Perceptions of preparedness for terrorist attacks revealed in the study include a willingness to respond, the level of confidence with tasks,

and estimated management capability. Analysis of the findings revealed that work experience was inversely related to perceptions. Moreover, that factors including male gender, adequate training for mass casualty events, terrorism-related management training, tabletop simulations, and functional exercises aimed at preparing personnel, and access to personal protective equipment positively influenced first responder perceptions. Concluded that more research is needed to improve first responder response, as there is a significant dearth of information on emergency preparedness from the perspective of emergency responders.

Acts of Terrorism and Subsequent Psychological Issues and Disorders in First Responders

According to Gerwehr and Hubbard (2006), “Terrorism is specifically designed to have far-reaching psychological effects beyond the immediate victim(s) or object of the terrorist attack. It is meant to instill fear within, and thereby intimidate a wider “target audience” (pp. 87-88). In this audience are police, firefighters, and emergency medical service personnel.

Psychological effects of exposure to terrorism incidents in first responders range widely and include issues and disorders such as depression, anxiety, poor sleep quality, musculoskeletal pain, cortisol affects, BMI affects, and coping mechanisms all of which may be influenced by demographic factors and individual experiences (Bergen-Cico et al., 2015; Clubb & Hinkle, 2015; Geronazzo-Alman et al., 2016; Smith, 2014; Wilson, 2015).

Smith (2014) identified psychological conditions such as first responder burnout who conducted a study of first responders and burnout as governed by the Occupational Safety and Health Act of 1970 (OSHA) in metropolitan Atlanta, Georgia. In the study, the author analyzed job burnout in first responders in Metropolitan Atlanta. Demographic characteristics of work role, gender, age, marital status, and length of employment were taken into consideration in this

study. The author noted that gender factors might have an influence on coping mechanisms of first responders, but research on gender factors have not been consistent and concluded that emergency events and terrorist attacks had influenced first responders' vulnerability to traumatic stress and psychological disorders while significantly influencing job burnout and turnover.

In addition, PTSD has been implicated in the experiences of first responders responding to events of terrorism. A study by Wilson (2015) was conducted to examine posttraumatic stress disorder (PTSD) in first responders. The author specifically examined PTSD rates in 20 studies following the September 11 attacks to provide an analysis of PTSD characteristics relevant to psychological risk factors in first responders. The author noted that PTSD rates in first responders are often explained by exposure to major disasters and mass causality events. As a result, he suggested that systematically addressing mental health concerns in first responders is essential for understanding the development of PTSD.

Bergen-Cico et al. (2015) analyzed emotional and physical stress in first responders and the impacts of specific psychological and biological measures as predictors of depression, anxiety, poor sleep quality, musculoskeletal pain, cortisol, and BMI conditions. This study used the following measures to assess PTSD predictors: (a) the PTSD Checklist-Civilian Version (PCL-C); (b) State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA); (c) the Center for Epidemiology Studies Depression Scale (CES-D); (d) the Pittsburgh Sleep Quality Index (PSQI); (e) Alcohol Use Disorders Identification Test (AUDIT); (f) Cornell Musculoskeletal Discomfort Questionnaire (CMDQ); (g) heart rate and blood pressure during two consecutive days; (h) body mass index (BMI); and (i) salivary cortisol measurements. The results revealed that a significant number of participants demonstrated predictors of PTSD.

Geronazzo-Alman et al. (2016) analyzed the psychological impacts of exposure to traumatic events in first responders. The study noted that, because of significant terror-related crime in the United States since the September 11 terrorist attacks, the prevalence of PTSD in first responders has increased from 6.3–22.0% in firefighters, from 6.5–14.1% in EMTs, and from 2.5–9.8% in police officers (Wilson, 2015). The results of the study indicated that all indexes based on exposure to work-related incidents examined in this study were significantly associated with PTSD outcomes and frequencies.

A study by Cone et al. (2015) specifically investigated probable chronic PTSD in police responders on the World Trade Center Health Registry 10 to 11 years after 9/11. Studying police enrollees without pre-9/11 PTSD and implementing the Posttraumatic Stress Check List (PCL) and multinomial logistic regression to measure risk factors for chronic, new onset or resolved PTSD, the researchers determined that half of the police with probable PTSD between 2003 and 2007 continue to have probable PTSD between 2011 and 2012. The researchers also found that women had a higher prevalence of PTSD than men (15.5% vs. 10.3%, 0.008). Determining that the risk factors for chronic PTSD include decreased social support, unemployment, 2þ life stressors in last 12 months, 2þ life-threatening events since 9/11, 2þ injuries during the 9/11 attacks, and unmet mental health needs, the researchers concluded that police responders to the WTC attacks continue to bear a high mental health burden.

In a similar study, of risk, coping, and PTSD symptom trajectories (which are often heterogeneous, and associated with common and unique risk factors) in World Trade Center responders, Feder et al. (2016) assessed a total of 4,487 rescue and recovery workers (1,874 police and 2,613 non-traditional responders) involved during and in the aftermath of the World

Trade Center (WTC) attacks 3, 6, 8, and 12 years after 9/11/2001. The researchers' investigation revealed that among police responders, WTC-related PTSD symptoms were characterized by four trajectories, including no/low-symptom (76.1%), worsening (12.1%), improving (7.5%), and chronic (4.4%) trajectories; among non-traditional responders, a five-trajectory solution was optimal, with fewer responders in a no/low-symptom trajectory (55.5%), and the remainder in subtly worsening (19.3%), chronic (10.8%), improving (8.5%), and steeply worsening (5.9%) trajectories. In contrast, higher perceived preparedness, a sense of purpose in life, and positive emotion-focused coping (e.g., positive reframing, acceptance) were negatively associated with symptomatic trajectories of PTSD.

Summary

A review of the literature reveals NIMS factors considered imperative for effective emergency preparedness and effective emergency response that include core command and control, organization and coordination (as well as collaboration), and communication. However, another set of research discovered both promotional and inhibitory influences on both intention and behavior regarding the acceptance, adoption, and implementation of NIMS requirements. Additional literature considered the barriers and challenges to best practices emergency preparedness and response in general and first responder sense making, decision making, and protective action in particular both intended and realized. Aligned with the theoretical framework, the literature that does address these dimensions of emergency preparedness for first responder best practices in response to terrorism cumulatively points to the impact of lone wolf terrorism on first responder experiences, perceptions, and psychological well-being. Such evidence, however, limited thus far, points to the deleterious psychological effects of terrorism in

general and lone actor terrorism in particular on emergency first responders. In Chapter 3, the methodology for this proposed study is explained in full.

Chapter 3: Research Method

In this interpretive, phenomenological study, is ought to examine the perceptions and sensemaking, decision making, and protective action behaviors associated with emergency preparedness for terrorism or traumatic incidents in first responders and to do so in the context of first responders' potential for developing PTSD.

In this chapter, I discussed the interpretivist research philosophy that informed the study, the research design that was used, and the rationale for the design, the strategy of interpretive phenomenological analysis that was performed for this study, and my role as the researcher who conducted the study. In addition, I discussed the study limitations, data collection and analysis procedures that were used to gather and interpret information that was possible about perceived first responder emergency preparedness. I also identify the probable PTSD incurred by first responders in the traumatic events in the metropolitan Atlanta region through the participants responses

Research Design Philosophy and Rationale

The research questions for this study were as follows:

RQ1. How do first responders perceive protocol implementations in response to emergency preparedness for traumatic incidents?

RQ2. How do first responders perceive the development and treatment of psychological disorders as a result of exposure to traumatic incidents?

RQ3. How do they perceive the effect of such disorders on first responder ability to act during such emergencies?

RQ4. What role does emergency preparedness first responder training play in decision-making behaviors of first responders?

Research Philosophy

The outmost layer of the research onion was the philosophy upon which the research approach was based (Cal & Tehmarn, 2016; Miles, Chapman, & Francis, 2015; Vagle, 2016). The overarching philosophy, phenomenology, provided options for the researcher that involved the descriptive phenomenology of Husserl (Martin, 2016) versus the interpretive phenomenology of Heidegger (Miles, Chapman, & Francis, 2015; Vagle, 2016). With descriptive phenomenology, the researcher understood the human experience, an objective which Husserl considered to be comprised of intentionality (whereby awareness comes as a result of reflection), bracketing (whereby the researcher as observer suspended beliefs in order to open up to the beliefs of others) (Chan, Fung, & Chien, 2013), and the essence, or “whatness.” of a thing, behavior, or phenomenon (Martin, 2016). With interpretive phenomenology, as Heidegger pursued it, the objective became to understand being-in-the-world—what Hegel characterized as *dasein*, existence (Miles, Chapman, & Francis, 2015), what fundamentally amounts to human existence as an essence in relation to others in existence. However, as Miles, Chapman, and Francis (2015) suggest, to choose to follow the Heideggerian hermeneutic tradition found that a combination of both descriptive and interpretive phenomenology to inform one’s efforts. In this respect, this study, which indeed followed the tradition of Heidegger, applied a philosophy that informed the interpretive phenomenological approach that attempted to capture the essence of perceived first responder emergency preparedness but also borrowed from the descriptive

phenomenological approach—practicing bracketing and other descriptive that obtained subjective details interpreted as objectively as possible.

The Interpretive Phenomenological Approach

Sloan and Bowe (2014) concluded that knowing when to use descriptive and interpretive approaches is essential for understanding how to approach the particular research study and population. Because the study focused not only on perceived first responder emergency preparedness but first responder emergency preparedness as traumatic events impacted it, the interpretive phenomenological approach was most suitable. That is, to study perceived first responder emergency preparedness in and of itself were the center investigation on only the “whatness” or only the essence of human existence or human nature. But as this study involved investigation perceived first responder emergency preparedness *as it was influenced by other* human existence and action, and as it, in turn, becomes at risk for psychological disorders such as post-traumatic stress disorder (PTSD), the interpretive phenomenological approach accounted for human existence as well as human essence *in relation* to the world of others (Miles, Chapman, & Francis, 2015).

Originating with Heidegger and further developed by Gadamer (1975, in Miles, Chapman, & Francis, 2015; Smith, Flowers, & Larkin, 2009), the basis of the interpretive phenomenological approach was a hermeneutic that is premised on three main elements: the fusion of horizons, the hermeneutic circle, and the temporality of truth first, whereas a longitudinal study involved examination of a phenomenon as it dynamically changes or remains static over time as do, for example the studies of PTSD risk and resilience trajectories in first responders to the World Trade Center terrorist attacks (Pietrzak et al., 2014) or longitudinal

pathway tests for PTSD in World Trade Center first responders (Kotov et al., 2015) an interpretive phenomenological study merged or meld time units. But more aligned with Gadamer's (1975, in Miles, Chapman, & Francis, 2015; Smith, Flowers, & Larkin, 2009) position, the fusing of time horizons also merges, in a nevertheless dynamic way, the experiences of the research and the experiences of the research subject to arrive at a shared experience, a mutual understanding of the phenomenon under study (Miles, Chapman, & Francis, 2015; Smith, Flowers, & Larkin, 2009). This study was intended not so much to take on the subjectivity of the participants of the study but took on the experiences of first responders while sharing the language of the experience(s) in order to come to a more cohesive, operational, working definition of the traumatic events in first responder experience. Without risking oversimplification, and with all intentions of avoiding subjective intrusion or bias on his part, the researcher listened to and recorded their words, and then interpreted their words, in order to carry out research efforts viewed through the epistemological lens that saw that it was through words the phenomena under study was articulated, as all experiences were "...soaked through with language" (VanManen, 1990, p. 38).

Second, the hermeneutic circle was symbolic of the nature of interpretive phenomenological investigation as it allowed for "the analytic movement between the whole and the part, in which each gives the other meaning" (Miles, Chapman, & Francis, 2015, p. 292); it allowed for the movement inward and outward in a circular process (Miles, Chapman, & Francis, 2015); and it allowed for infinite and perpetual possibilities (p. 292). Given the multiplexity of this proposed study—was purposed toward understanding (a) the role of the emergency first responder in differentiating between problems, hazards, crises, disasters, catastrophes, and

emergencies (Smith, 2014); (b) the NIMS and ICS components of effective emergency management; (c) the barriers to effective sensemaking, decision making, and protective actions; (d) the pathogenic influences of traumatic events on first responders; and (e) emergency management training for and after (and because of) the traumatic event—the hermeneutic circle of the interpretive phenomenological approach enables the researcher to move into and out of (a), (b), (c), (d) through (e) interchangeably and cyclically, taking the factors, variables, and interactive properties of each as they are connected to and affect one another. Most obvious examples were in the research pursuit of understanding emergency response training, emergency responder perceptions, and roles as training influenced them, and capacity for training immediately following and also during and for the long-term that is compromised by the very emergency that is the traumatic event.

Third, with temporality characterizing not linear time but lived time, being in the world time (Miles, Chapman, & Francis, 2015; Smith, Flowers, & Larkin, 2009), the temporality of truth, as Heidegger, postulated, consists of truth as it is in ever-constant flux between both that which reveals and that which conceals (Miles, Chapman, & Francis, 2015; Smith, Flowers, & Larkin, 2009). According to Miles, Chapman, and Francis (2015), citing Heideggerian phenomenology, there are two kinds of values of truth—truth as *veritas*, which enables a distinguishing between truth and no-truth, and *aletheia*, which has and conveys meaning or meaningfulness, revealed by way of attentiveness to the thing in its self-showing state (Miles, Chapman, & Francis, 2015; Smith, Flowers, & Larkin, 2009). For this study, the temporality of truth were the additional perpetual layer that transcends time, that moves in and out of time, and that, without being characterized according to time, allowed the researcher to uncover the onion

layers (of meaning, of essences) to reached the core of the onion or the core essence(s) of first responder emergency management sensemaking, decisionmaking, and protective action while having probable traumatic event-induced PTSD.

Strategy: Interpretive Phenomenological Analysis (IPA)

Because this study focused on the perceptions, decisions, and behaviors as well as the pre-and post-training of first responders in the context of traumatic events that contribute to probable PTSD, researcher engaged in the interpretive phenomenological analysis (IPA; Martin, 2016; Smith, Flowers, & Larkin, 2009). Where the objective gathered as much information as is possible about perceived first responder emergency preparedness, given the probable PTSD incurred by first responders in the event of traumatic incidents in the metropolitan Atlanta region, IPA provided the researcher with the foundation (s) needed to conduct the qualitative, experiential, and psychological research needed (Benner, 1994; Martin, 2016; Smith, Flowers, & Larkin, 2009).

Role of the Researcher

Smith, Flowers, and Larkin (2009) characterize the interpretive phenomenological research process as a dynamic one involving a researcher playing an active role. The researcher conducted an interpretive phenomenological study, performed flexible thinking, processes of reduction, expansion, revision, creativity, and innovation in order to navigate the onion-peeling process that was phenomenological research and analysis (Cal & Tehmarn, 2016; Miles, Chapman, & Francis, 2015; Vagle, 2016). The multiplexity of such a study as the one proposed required the fluidity and the multi-directionality of that which IPA afford (Cal & Tehmarn, 2016; Miles, Chapman, & Francis, 2015; Smith, Flowers, & Larkin, 2009; Vagle, 2016). In particular,

the IPA researcher conducted semi-structured interviews which required the researcher not dictated and control but facilitate and guide (Smith, Flowers, & Larkin, 2009). Whereby the role of the participant was reflected on and make sense of experiences, convey these experiences and reflections, and determined the direction the interview took once the protocol had been introduced (Smith, Flowers, & Larkin, 2009), the role of the researcher was to asked the right questions in order to received the information about these experiences and reflections, to accurately recorded the expressions of the participants, to carefully, thoughtfully, and consistently make sense of what the participants disclosed (and what they do not disclose). As Smith, Flowers, and Larkin (2009) suggest, the researcher who conducted interpretive phenomenological research was, in essence, conducted a double or meta-hermeneutic as the researcher made sense of the content of which the participants originally make sense.

Ethical Considerations

Ethical procedures were carried out. They included agreements to gain access to the participants were made, and IRB approval was obtained from Walden University with approval number 03-23-18-0607101. Several ethical considerations were also made throughout the study process. No harm was brought to all the participants. The research maintained respected for the dignity of all study participants, especially given the nature of the study as it elicited strong emotions regarded traumatic events as they influence first responder emergency preparedness. Informed consent was obtained from all the 16 participants prior to the study, and the privacy of all participants was protected with efforts of confidentiality. Research transparency was maintained at all times and data were not exaggerated, concealed, or otherwise inappropriately represented. The anonymity of all participants and their affiliated organizations were ensured:

pseudonyms were used in the place of actual names. There is no affiliation on the part of the researcher with any external funding sources, and no conflicts of interest were anticipated.

Data Collection

The purpose of this qualitative interpretive phenomenological study was to examine perceptions and behaviors associated with emergency preparedness for traumatic incidents in first responders. Purposive sampling was done in participants selection.

Participants

A sample of 16 first responders, including police officers and firefighters, were interviewed to analyze perceptions of protocol implementation, psychological disorder development and treatment, and decision-making behaviors relevant to emergency preparedness. According to phenomenological research protocols, in-depth research with at least six individuals can be used to obtain data saturation (Sloan & Bowe, 2014). 16 participants sample sizes were possible with phenomenological research designs, due to the researcher's ability to reach data saturation using focused, in-depth analysis methods. Furthermore, the sample size allowed for more extensive interview approaches. The sample size of 16 was determined as sufficient to obtain data saturation based on the phenomenological literature findings (Palinkas et al. 2015; Sloan & Bowe, 2014).

Sampling

This study used purposive sampling methods in recruitment participants based on selected study criteria. Purposive or purposeful sampling lends itself to this study by providing a way to interview subjects who were information-rich (Palinkas, Horwitz, Green, Wisdom, Duan, & Hoagwood, 2015). That is, a study on first responder emergency preparedness was best

conducted using men and women who were first responders with experience. The purposeful sampling strategy involved criterion sampling (Palinkas et al., 2015). The study criteria included occupation as a first responder (as a police officer, firefighter, and EMT), and minimum of two years of experience in the individual's current role. Experienced level criteria were chosen in order to ensure some degree of sample homogeneity (Smith, Flowers, & Larkin, 2009) and participant consistency in the amount of training received. A list of potential candidates was randomly generated, and the researcher contacted potential candidates to determine eligibility for participation in the study. When obtained information about the participants, participant demographic information, role, and the amount of experienced were recorded.

Instrumentation

Semi-structured interviews for interpretive phenomenological study the researcher easily managed the typical tradition for data collection for this approach, allowed for a one-on-one exchange, and give the participants a voice that spoke to the lived experience the researcher was attempted to understand (Miles, Chapman, & Francis, 2015; Smith, Flowers, & Larkin, 2009). Moreover, the semi-structured interview method "facilitated rapport and empathy, [which allowed for] great flexibility of coverage" (Miles, Chapman, & Francis, 2015, p. 66). Moreover, unlike the structured interview method, which only allows for a regimented protocol of closed-ended questions, and unlike the unstructured interview, which would require prompts and probes that keep interviewees responding at great length, the semi-structured interview method allows for a balance of open, closed, and fixed choice questions to elicit reliable, comparable qualitative data (RWJF, 2008). In the data collection process, 45- to 60-minute interviews were scheduled with participants. Before interviews began, participants were briefed on the study's purpose, and

signed consent forms acknowledged participation in this research. Participant confidentiality was maintained by providing code names, storing participant information in locked file cabinets, and destroying all participant data after three years. Once consent forms were signed, participants asked to respond to a list of semi-structured interview questions. Interviews were recorded and transcribed with participant consent. Semi-structured interviews were used during data collection in order to cover the breadth of the study's focus and research questions. Questions were formulated to reflect literature and theoretical findings consistent with the in-depth analysis of first responder emergency preparedness perceptions.

Study Limitations

As was briefly discussed in Chapter 1, some possible limitations of the study include questionable homogeneity of the sample size (Smith, Flowers, & Larkin, 2009), possible researcher bias, and participant sensitivity to the research topic. In the first instance, efforts were made to find homogeneity in the group of metropolitan Atlanta first responders for whom the research questions of this study carried meaning (Smith, Flowers, & Larkin, 2009). To the extent that the individual participants of the study vary from one another, the researcher took significant efforts to contained as much of the variation as possible (Smith, Flowers, & Larkin, 2009). In the second instance, this researcher took umbrage in the legitimacy of the subjective emotions that arose when considering and discussing the impacts of traumatic on the human experience. It was, however, intended that the data did not influence these biases in any significant way. Moreover, the researcher practiced bracketing which was familiar with such forms of phenomenological

investigation. This means the researcher attempted, where necessary and possible, to suspended personal beliefs that otherwise be intrusive in order to be open to the beliefs of others (Martin, 2016; Miles, Chapman, & Francis, 2015; Smith, Flowers, & Larkin, 2009) and to thereby extract authenticity of participant expression(s). A reflexive journal was used to document researcher questions and comments during data collection and analysis to minimized bias during research. In the third instance, where participants had a sensitivity to the topic, content, or context of the study, the researcher ensured the psychological safety of the participants (McCosker, Barnard, & Gerber, 2001). Using the semi-structured interview method, which lend to requisite rapport and empathy (Smith, Flowers, & Larkin, 2009), included that the researcher was sensitive where the interviewee needed time and space to express profound emotion, that the researcher acknowledged the concern for the well-being of all participants, and indicated that interview responses were “accepted” (McCosker, Barnard, & Gerber, 2001). Furthermore, participants were informed of their ability to end participation with the study at any time, and the researcher ensured that participants were comfortable with the interviewed questions asked during the data collection process.

Data Analysis

During data analysis, an interpretive phenomenological protocol was used, and data collected during the study were analyzed using Nvivo 11 software (Benner, 1994; Smith, 2007). Transcripts were read twice in order to gain an understanding of the issues discussed during interviews. Protection motivation theory (PMT) and the theory of planned behavior (TPB) frameworks, as well as the framework of the NIMS) and the CIS)—were pertinent—were consulted to create preliminary codes. After preliminary codes were created, codes were

consolidated and categorized based on the determination of expected themes and patterns consistent with the theoretical frameworks. In the next step, the codes were modified to create descriptions that capture the essence of the perceptions uncovered in the dataset (Benner, 1994; Smith, 2007). An iterative process of cross-checking was used to compare observations with theoretical and literature findings. Frequencies of themes and subthemes were documented, and a final report on the study's findings was created.

Issues of Trustworthiness

Issues of trustworthiness in a qualitative study involve credibility, transferability, dependability, and confirmability, sibling, constructs to the internal validity, external validity, reliability, and objectivity, respectively, as constructs of quantitative design (Morse, 2015). Established in the 1980s by Guba and Lincoln (in Morse, 2015), these criteria when met are intended to ensure rigor of the study conducted.

Credibility

Credibility, understood as the internal validity of the research, is defined as the “degree to which inferences made in a study are accurate and well-founded” (Polit & Beck, 2012, p. 745, in Morse, 2015, p. 19). Credibility was attempted by the researcher in several ways, including by persistent observation, referential adequacy, and process and terminal member checks.

Transferability

Transferability, understood as the external validity of the research, is defined as “extending the research results, conclusions, or other accounts that are based on the study of particular individuals, setting, times or institutions, to other individuals, setting, times or institutions than those directly studied” (Maxwell & Chmiel, 2014; Polit & Beck, 2012). The

researcher attempted transferability by way of the efforts to secured credibility as well as by way of inquiry audits and an audit trail,

Dependability

Dependability, understood as the reliability of the research, is defined as “the consistency and/or repeatability of a project’s data collection, interpretation, and/or analysis” (Miller, 2008, p. 745, in Morse, 2015, p. 19). The researcher attempted dependability

Confirmability

Confirmability, understood as the objectivity of the research was attempted by the researcher using the strategies of triangulation and the audit trail.

Summary

The methodology chapter had made it possible to provide a discussion of the proposed rationale for the use of components of the research onion. The interpretive phenomenological approach lends to a qualitative research design using semi-structured interviewed for the selection of participants through purposive sampling. Focused on the perceived experiences of first responders with emergency preparedness, events of traumatic and potential PTSD, the methodology was acknowledged to have potential limitations—including questionable homogeneity of the sample size, possible researcher bias, and participant sensitivity to the research topic. While sample size and researcher bias can challenge the rigor of the study in terms of the extent of subjectivity that might be involved in or associated with this qualitative approach, the role of the researcher was guided instead not dictator and the efforts toward trustworthiness retained the integrity of the research into one of the most human and humanly relatable domains. As an experiential, psychological, qualitative effort, this research answered to research questions that, if answered, contributed to the literature, support augmented first

responder training methods, and urged the progress of mental health practices for first responders with PTSD as a result of work in emergency preparedness and emergency management during acts of traumatic. Chapter 4 contains the presentation and integration of data analysis from the qualitative research method used in my study. The purpose of this chapter 4 was to report the data analysis so that it would be easy for the readers and draw independent conclusions from the data on the possible training needed for the first responders.

Chapter 4: Results

Introduction

The purpose of this interpretive phenomenological study was to examine perceptions and sensemaking, decisionmaking, and protective action behaviors associated with emergency preparedness for traumatic events such as terrorism incidents among first responders (Kuligowski, 2011) in the context of first responders' potential for developing PTSD; and understand these components as they apply in the context of traumatic events in general and as they apply to first responders' perceptions and behaviors associated with emergency preparedness for traumatic events. The following four research questions guided the study:

RQ1. How do first responders perceive protocol implementations in response to emergency preparedness for traumatic incidents?

RQ2. How do first responders perceive the development and treatment of psychological disorders as a result of exposure to traumatic incidents?

RQ3. How do they perceive the effect of such disorders on first responder ability to act during such emergencies?

RQ4. What role does emergency preparedness first responder training play in decision making behaviors of first responders?

Chapter 4 includes a description of the set of data collection, followed by a description of the relevant demographic characteristics of study participants. Next some descriptions of the implementation of the data collection and data analysis procedures described in Chapter 3, followed by a discussion of the evidence of the trustworthiness of the study's results. Finally, Chapter 4 includes the presentation of the results of the data analysis.

Setting

The interviews were conducted one-on-one, in person, at a location and time of the participant's choice. The goal was to ensure that they would feel comfortable and thus would be more likely to give detailed and honest responses to the questions. Participants selected the time of the interview to ensure adequate time to give detailed responses without feeling pressured to attend to other obligations. In addition, participants were assured that their identities would remain confidential to ensure a higher likelihood of truthful responses, and to comply with IRB and Walden University research ethics.

Demographics

The study included a purposive sample of 16 first responders, at least 18 years of age, and had at least 2 years of experience in their current role. Table 1 lists their relevant demographic information.

Table 1

Participant Demographics

Participant	Gender	Years of experience	Current first-responder branch
1	Male	2	Firefighter/EMS
2	Male	26	Firefighter/EMS
3	Male	34	Police
4	Male	15	Firefighter/EMS
5	Male	22	Firefighter/EMS
6	Male	15	Firefighter/EMS
7	Male	5	Firefighter/EMS
8	Female	11	Firefighter/EMS

9	Male	7	Firefighter/EMS
10	Male	18	Firefighter/EMS
11	Male	25	Firefighter/EMS
12	Male	8	Police
13	Male	21	Police
14	Male	5	Police
15	Female	17	Police
16	Male	28	Police

All participants described traumatic incidents in which they served as a first responder or else spoke in general terms about the influence of emergency-preparedness training on first responders' readiness to act during traumatic events.

Participant 1

Participant 1 experienced traumatic incidents involving the deaths of children and found training helpful in coping: "We have some couple of incident where small children are killed . . . so when you're faced with that decision or similar situation, they go back to what they can do [because of training]"

Participant 2

Participant 2 spoke of the importance of experience in addition to training:

“We take our officers through extensive developmental training that will help them with making their decision, and you have to have experience along with the training, and I think they go hand-in-hand because I can tell the difference between when I have a seasoned officer that trained out there don't worry about them on call on calls but if I have someone that's younger firefighter that's maybe an acting position turn on the radio I will have to go out there just to kind of keep an eye on.”(Participant 2)

Participant 3

Participant 3 described traumatic incidents involving harm to children in general, and in the third-person. According to Participant 3;

“First responders occasionally encountered an overturned vehicle with a child and that child may be the same age range of their particular children at home. So that could be a stressful situation for them and having um, therapy and things in place for them to kind of deal with that before they go home or um, before they leave the shift or even when they get that from the call is important to have those vehicles in place for them to be able to express how they feel and maybe even if they need to step away for a while to try to recollect themselves.”

Participant 4

Participant 4 spoke of the effects of training on the emergency-preparedness of firefighters. According to Participant 4;

“In a fire situation of knowing the, uh, the science of fire and how it reacts to different materials and things like that. And also, the science behind the fire then then on top of that, the like the building construction and knowing that building construction and how

the firewood is actually reacting, you know, these certain types of building materials or maybe a particular, a design of a building, how it would move and their sir. So yeah, so we were trying all that. So, we have a knowledge, and so in an emergency situation we can act quickly on it and take care of the problem quickly, so it doesn't become more of a problem.”

Participant 5

Participant 5 spoke of emergency-preparedness training as a source of confidence and reassurance for first responders. “[Training] can help you do the best for the situation that you can and that way you don't second guess how you handle or something you didn't cause a problem, but you know that you did the best you could fix the problem.”

Participant 6

Participant 6 did not describe a specific traumatic event or describe the effects of training on first responders' overall readiness.

Participant 7

Participant 7 did not describe a specific incident but referred instead to the general influence of emergency-preparedness training on first responders' readiness. “Any kind of training that we've done as I've every call we go on, I can see how a, whether it be a fire, just what we've done in live fire training. I mean it to an extent. It's a very basic to try and because every situation we go to is different.”

Participant 8

Participant 8 described the experience of a fellow EMT. “EMTs that have just out of school. They were on the very first call. There's a traumatic call. I have had several friends that

they are EMS called it now. This guy had just got out of school, EMT school. We were in a traumatic incident, car wreck. He couldn't handle it after that, and he quit the very next day.”

Participant 9

Participant 9 could not think of a specific traumatic incident to describe but explained the general effect of emergency preparedness training on first responders’ reactions and decision-making. According to Participant 9;

“Pretty much we are being in or around someone for 24 to 48 hours while we’re working. We kind of have an idea of what is expected to be done and so we just kind of get there and do it and you know, oftentimes you don't have to be asked or told, you know, hey, don't do this, this and this, and it’s just kind of a second nature, you know, muscle memory type thing.”

Participant 10

Participant 10 described the general effects of emergency preparedness training. According to Participant 10;

“We are always affected by our emergency preparedness training. There is never a time when we're not affected. There's never a time when an officer's decision making is not influenced by that because we drill and we train on those things. As soon as calls come out, we start to think about what is the appropriate response, and there are so many scenarios that we've been on, that we've trained on that as soon as the radio goes off and they started to say what has happened, we started to think about, OK, say it's a traumatic, a motor vehicle accident. We started to think about all the things that, that, that we have to do in those situations. We started to think about how to protect ourselves. We think

about what might be going on when we get there. Are we going to have to get in the car? Are we going to have to cut the car open to get to the person? Is the person going to need to be stabilized in the car? Are we going to have time to pull them out of the car before we stabilize them? Is it going to be safe for us? So, there are a lot of things, so we're always affected by our training, our preparedness training.”

Participant 11

Participant 11 recounted a traumatic incident in which inexperienced first responders had been deployed. “I had one company officer that experienced a pretty serious vehicle accident where a family of five people died in that accident. In that accident, the entire crew that was on that accident were under five years in the business. Therefore, this was their first experience with experiencing death like that.”

Participant 12

Participant 12 described a violent situation that arose during the execution of a warrant. According to Participant 12;

“In a tactical situation during an execution of a warrant individual, um, when once the home is breached individual, because of the officer’s safety, where the officers were set up at the rear exterior of the home. Because that officer was in that subject’s blind spot when he ran out that back door, they kept the other officer from being killed because he ran in their line of sight of the officer that was basically stationed at the rear of the home, but not in. The other officer had cover and concealment, but he was not so close up on the door when the subject ran, the subject was able to act. The officer was able to act before

the subject was able to act and you know, being an officer, safety is always paramount in those types of situations.”

Participant 13

Participant 13 described a violent incident in which he and his partner had been in danger. According to Participant 13;

“There were four homeless guys. Uh, we didn't know which one. They were covered in blankets, and my senses said don't go in, and to bring everybody out. By that time my partner had walked in and walked in, and I followed him because he walked in, two of the homeless guys woke up. They had knives, one stayed asleep, and the one with the gun woke up... [and] the gate locked you can, you could hear the metallic click. And we were in a very confined space. The guy with the gun got up, the other two homeless guys kind of surrounded us. We drew our weapons and let dispatch know what occurred or what was going on. The two homeless guys actually started coming towards us. So, me and the officer. . .went back to back and we started, you know, dealing with those three guys. We got to the gate and the gate when wouldn't open. The first guy with the knife, the first homeless guy with the knife basically started advancing like fast. My partner had already had his weapon now. He gave commands, you know, drop the knife, drop the knife. At the time the guy with the gun stood there watching the second guy, second homeless guy with the knife, dropped his knife. The first guy didn't. My partner ended up shooting that guy.”

Participant 14

Participant 14 described an incident when a first responder P14 trained saved a victim's life. "We received a call that someone was being transported to jail was in distress and foaming at the mouth. When I got to the scene, the officer that I had trained had already had the victim on the ground and was already using CPR when I arrived."

Participant 15

Participant 15 described a hostage situation. According to Participant 15;

"When we had a hostage situation, an officer relied on their training when they responded, and they assessed the situation. It was dark outside and noticed the car had flat tires. So, all of that played into gathering information when you're not getting people to respond back to you on what we need, who to contact, like the SWAT team and things like that."

Participant 16

Participant 16 described how the intervention of a coworker saved a shooting victim's life. According to Participant 16;

"One incident we have, I can remember working with an officer who assisted with a shooting call that we had, and when he got there, we had a victim that was shot and bleeding profusely. So, based on his level of training, he was able to apply what we call a turney kit to stop the bleeding in that quick thinking, save that person's life, so he was prepared."

Data Collection

The study used semi-structured interviews with 16 participants. Interviews were conducted in public locations in which privacy was available. One interview was conducted with each participant, and the average duration of the interviews was approximately 45 minutes. Interviews

were audio-recorded using a digital recording device. There were no variations from the data collection procedure described in Chapter 3, encountering no unusual circumstances during data collection.

Data Analysis

Recorded interviews were transcribed verbatim, yielding approximately 70 pages of transcripts. Transcripts were uploaded into NVivo 11 software for analysis. Transcripts were read twice to gain an understanding of the issues discussed during interviews. Codes were created and given labels that corresponded to interpretations of the data and perceived similarities among different items of data. In NVivo, this process involved creating nodes and labeling them with descriptive words or phrases that indicated ideas or themes that emerged from groups of similar data elements. In the next step, similar codes were grouped into themes. In NVivo, this process involved creating parent nodes, labeled with descriptive words or phrases and grouping the nodes from the previous step under them as child nodes. Overall, the process included coding 139 data elements, grouped into seven themes and a set of participant narratives used in the demographics section of this chapter, above. Table 2 indicates the codes that emerged during data analysis and the themes into which the codes were grouped, along with the number of occurrences of each code. Table 3 indicates the number of occurrences of each theme.

Table 2

Coding Frequencies and Percentages

Research question and theme	Code	No. of occurrences of code	% of the dataset included in the code
RQ1/Theme 1:	Preparedness training essential	6	4.32%

Emergency preparedness is perceived as critical	Training improves preparedness	6	4.32%
	Need for constant preparedness training	4	2.88%
RQ1/Theme 2: Emergency preparedness is perceived as inadequate	More preparedness training needed	8	5.76%
	Trauma an unavoidable part of job	5	3.60%
	Can never completely prepare	2	1.44%
RQ2/Theme 3: First responders are unlikely to seek treatment	Low likelihood of treatment used by officers	16	11.51%
	Willing to disclose PTSD	10	7.19%
	Unwilling to disclose PTSD	7	5.04%
RQ2/Theme 4: The development of psychological disorders is perceived as likely	Very high likelihood of PTSD	10	7.19%
	Moderately high likelihood of PTSD	3	2.16%
	Discrepant cases: low likelihood of PTSD	3	2.16%
RQ3/Theme 5: Hesitation during emergencies	Hesitation	9	6.47%
	Triggers	1	0.72%
RQ3/Theme 6: Numbness and distraction during emergencies	Numbness/lack of focus	11	7.91%
	Fear-triggered reactions	3	2.16%
	Effects on interaction/functioning	3	2.16%
RQ4/Theme 7: Training makes decision-making automatic	Training forms a good basis for decision-making	14	10.07%
	Instinct and training	3	2.16%

Demographics/ narrative accounts of traumatic incidents	Lack of training or awareness	4	2.88%
	Facing the death of victims	3	2.16%
	The process of assessing risk	3	2.16%
	Medical response	2	1.44%
	Responding to specific risk situations	2	1.44%
	Knowing you did your best	1	0.72%
Total:		139	100%

Table 3

Theme Frequencies and Percentages

Theme	# of occurrences of theme	% of the dataset included in the theme
Theme 1: Emergency preparedness is perceived as critical	16	11.51%
Theme 2: Emergency preparedness is perceived as inadequate	15	10.79%
Theme 3: First responders are unlikely to seek treatment	33	23.74%
Theme 4: The development of psychological disorders is perceived as likely	16	11.51%
Theme 5: Hesitation during emergencies	10	7.19%
Theme 6: Numbness and distraction during emergencies	17	12.23%
Theme 7: Training makes decision-making automatic	17	12.23%
Narrative accounts of traumatic incidents	15	10.79%
	139	100%

Discrepant Cases

When the transcription of the participants' interview was done, along with the review of the recorded audio, there was no evidence or any case of disclosed discrepant cases in the entire research data.

Evidence of Trustworthiness

Issues of trustworthiness in a qualitative study involve credibility, transferability, dependability, and confirmability, sibling, constructs to internal validity, external validity,

reliability, and objectivity, respectively, as constructs of quantitative design (Morse, 2015).

Procedures used to enhance each of these factors include a description in this section.

Credibility

Credibility, understood as the internal validity of the research, includes a definition as the “degree to which inferences made in a study are accurate and well-founded” (in Morse, 2015, p. 19). To enhance the credibility of the study’s results, the researcher used a survey to screen potential participants according to the inclusion criteria for the study. Additionally, the researcher conducted member-checks by emailing interview transcripts and preliminary interpretations to study participants, along with a request for feedback. Participants agreed that the transcripts and interpretations were accurate. Finally, the researcher ensured participants that their identities would remain confidential, to encourage participant honesty.

Transferability

Transferability, understood as the external validity of the research, includes definition as “extending the research results, conclusions, or other accounts that are based on the study of particular individuals, setting, times or institutions, to other individuals, setting, times or institutions than those directly studied” (in Morse, 2015, p. 19). To allow future researchers to assess transferability, the researcher provided detailed descriptions of the inclusion criteria for the sample, to ensure that readers may assess whether data gathered from the present study’s sample are likely to hold true for other samples or populations. The researcher also provided detailed descriptions of the data collection methods employed in this study.

Dependability

Dependability, understood as the reliability of the research, includes definition as “the consistency and /or repeatability of a project’s data collection, interpretation, and /or analysis” (in Morse, 2015, p. 19). The researcher enhanced the dependability of the study’s results by providing detailed descriptions of the data collection and data analysis procedures.

Confirmability

Confirmability is the extent to which a study’s results are determined by the perceptions and experiences of the participants, rather than by any bias of the researcher (Morse, 2015). To enhance the credibility of this study’s results, the researcher provided in-depth methodological descriptions to allow the integrity of the procedures to be assessed. Additionally, interview transcripts and preliminary interpretations were member-checked to confirm that this data accurately represented the opinions and experiences of the study participants, rather than the researcher’s biases. Participants confirmed that transcripts and preliminary interpretations were accurate.

Results

This presentation of results is organized by research question. Results related to research question 1 indicated how first responders (FRs) perceive protocol implementations in response to emergency preparedness for traumatic incidents. In relation to research question 2, results indicated how FRs perceives the development and treatment of psychological disorders as a result of exposure to traumatic incidents. Results associated with research question 3 indicated how FRs perceives the effect of such disorders on FR ability to act during emergencies. In relation to research question 4, results indicated what role emergency preparedness FR training

plays in decision-making behaviors of FRs. Within the presentation of findings related to each research question, results include organization by theme. A major theme was identified when at least eight participants (50%) described similar perceptions or experiences of the phenomenon. A minor theme was identified when four to seven (25% to 43.75%) participants expressed similar perceptions.

Research Question 1

Research question 1 was: How do first responders perceive protocol implementations in response to emergency preparedness for traumatic incidents? Two major themes emerged during data analysis to answer the research question, including: (a) Emergency preparedness is perceived as critical, and (b) Emergency preparedness is perceived as inadequate. Table 3 indicates the number of participants who contributed to each of these themes.

Table 4

Research Question 1 Themes

Theme	Number of participants contributing to the theme	% of participants contributing to the theme
Emergency preparedness is perceived as critical	10	62.50%
Emergency preparedness is perceived as inadequate	10	62.50%

Note. N=16.

Theme 1: Emergency preparedness is perceived as critical

Ten out of 16 participants indicated that they perceived current emergency preparedness participants indicated that they perceived emergency preparedness for protocol implementation

in traumatic incidents to be critical. Participant 2 stated, “preparedness, I think its very important for traumatic incidents . . . it played a big part in whether the patient or patients survived.”

Participant 6 called preparedness, “an absolute necessity that you prepared as much as possible so that things can go smoothly on the scene.” Participant 11 referred specifically to training as a part of preparedness: “I perceive emergency preparedness for traumatic incidents as necessary...because we will never really know when we are going to be faced with that traumatic experience . . . training is a vital part of our preparedness.” Participant 16 referred to training as essential for effective protocol implementation, saying, “training, without it I don't think we could do our job because we deal with a lot of emergency situations that are traumatic, so it definitely helps us and prepares us to do our job.”

Additionally, participants perceived a need for emergency preparedness training to be ongoing. Participant 1

indicated that training in emergency preparedness needed to be ongoing because the world continued to change, and new experience was being gained that could lead to more effective responses in the future: “the climate of today’s world is always changing and evolving. So, we always learn from past incidents to prepare for the future.” Participant 3 also referred to evolving protocols in stating that training in emergency preparedness needed to be ongoing: “fire and emergency personnel are constantly training maybe a couple of times a week and as procedures and processes change within the industry. There is constant training for them to be prepared to respond.” Participant 4 said, “continuing education can help us in a traumatic or an emergency type situation.”

Theme 2: Emergency preparedness is perceived as inadequate

Ten out of 16 participants indicated that they perceived current emergency preparedness as inadequate for traumatic incidents. Emergency preparedness included the perception as inadequate either because more training was needed (according to eight participants) or because emergency preparedness could never adequately prepare first responders for traumatic incidents (according to two participants). Participant 6 said of training in emergency preparedness, “It’s necessary, but it should be done more.” Participant 7 described a need for constant training: “We should be trained all the time to be prepared for a different situation that may arise.” Participant 8 said, “We need a lot more preparedness.” Participant 11 felt that emergency preparedness training in the region was lagging: “I kind of feel like we’re somewhat behind in our training. We could stand to maybe increase our training efforts with emergency preparedness.” Participant 1 suggested that emergency preparedness was often inadequate because communities that had not experienced a traumatic incident might not perceive themselves as vulnerable: “[In] the general public a lot of people are complacent. It never happened here kind of thing; it has to happen to them before they get ready for it.”

Participant 9 indicated that emergency preparedness would always be inadequate for some traumatic incidents: “You can’t necessarily be prepared for certain traumatic incidents...you may get people to tell you it doesn’t bother you, but over time it’s going to. And it does affect you at some point and in some matter.” Participant 9 added, “you can never be fully prepared for seeing anything or any person at their worst possible moment, whether it’s a car accident, house fire or whatever that case may be.” Participant 15 said, “you didn’t ever receive enough training.

Although you trained, you never can plan what will happen.”

Research Question 2

Research question 2 was: How do first responders perceive the development and treatment of psychological disorders as a result of exposure to traumatic incidents? Two major themes emerged during data analysis to answer the research question, including (c) First responders are unlikely to seek treatment, and (d) The development of psychological disorders is perceived as likely. Table 4 indicates the number of participants who contributed to each of these themes.

Table 5

Research Question 2 Themes

Theme	Number of participants contributing to the theme	% of participants contributing to the theme
First responders are unlikely to seek treatment	16	100%
The development of psychological disorders is perceived as likely	13	81.25%

Note. N=16.

Theme 3: First responders are unlikely to seek treatment

16 out of 16 participants perceived FRs as unlikely to seek treatment for psychological disorders developed as a result of exposure to traumatic incidents. Participant 2 experienced other FRs refusing treatment: “they refuse it, they would say no chief, they are ok, and they don’t need treatment.” Asked whether FRs were likely to seek treatment for psychological disorders, Participant 6 stated, “I would say very unlikely because we’re supposed to be tough firefighters, and nothing supposed to affect us.” Participant 7 suggested a generational difference in the

likelihood of help-seeking: “I believe the older generations are a lot less likely to pursue treatment while the younger generation are more likely.” Participant 8 indicated that firemen preferred self-help: “Firemen have very self-sustained ways to deal with stress, traumatic events their own way. So they're very unlikely they will ask for help.” Participant 10 (personal communication, April 10, 2018) agreed that self-help and camaraderie were preferred over treatment: “we make light of situations. We have our own ways of coping with stress.”

Participant 13 indicated that officers needed to be forced into treatment: “Officers usually don't seek treatment. They have to be placed in treatment. And usually, that's after a reaction, meaning they're put in another position or the same position, and they respond differently or worse.” Participant 13 attributed this reluctance to seek help to the relationship between officers' self-reliance and self-confidence: “officers don't seek treatment because it makes us feel weak...It makes us feel as though we can't handle the job.” Participant 12 said, however, that officers may be discouraged from seeking treatment, or that they may feel guilty about seeking help: “a lot of times those units are understaffed, and you just don't have the manpower in order to have people to not be there in order to be able to go and seek that type of help.” Participant 15 perceived treatment as dangerous to an officer's standing in the profession: “they're not very likely to pursue treatment as it could be the end of their career.”

Ten out of 16 participants indicated, however, that if they felt they had PTSD, and if they felt the disorder affected their ability to do their job, they would disclose their condition to their superiors. Participant 6 said, “if you're feeling completely overwhelmed by your PTSD, you gotta let your superiors know about it because we rely on each other and if someone's suffering from the effects of PTSD and can't do their job, they can get everybody else hurt.” Participant

10 left open the possibility of staying out of treatment, provided that the person living with PTSD could handle the condition him- or herself: “as long as you are able to...handle it in healthy and appropriate ways then fine. But when you're not able to function and be productive, and you're preoccupied, then it's time to get help.” Participant 11 referred to the potential effects of an FR’s PTSD on fellow FRs: “if I were faced with PTSD, I think it would be my duty to let the people that I work with know because my actions affect their actions.” Participant 14 expressed a similar opinion, saying that if he had PTSD: “it may affect [colleagues] as well and probably disclosing it, it may help.”

Theme 4: The development of psychological disorders is perceived as likely

Thirteen out of 16 participants perceived the development of psychological disorders such as PTSD as likely in FRs who had been exposed to traumatic incidents. Participants were asked to rate, on a scale of one to five, the likelihood that FRs would develop psychological disorders after being exposed to traumatic incidents. Table 5 indicates the numerical components of their responses.

Table 6

Likelihood of Psychological Disorder Development in First Responders

Likelihood rating (1=lowest likelihood, 5=highest likelihood)	Number of participants giving rating	% of participants giving rating
5	8	50.00%
4	2	12.50%
3	3	18.75%
2	1	6.25%
1	2	12.50%

Note. N = 16.

The mean rating of likelihood across all participants was 3.81, indicating a perception that the likelihood of FRs developing psychological disorders as a result of exposure to traumatic incidents is moderately high. 13 out of 16 participants perceived the development of psychological disorders as likely, giving a likelihood rating of three, four, or five. Responses from these 13 participants are included in the theme, indicating that the development of psychological disorders is perceived as likely. Participant 8 said, “It’s a very busy department, and our calls are very traumatic for the most part. So, it’s a high, high probability they will develop, a number five.” In rating the likelihood at five, Participant 10 stated, “I think that we probably all suffer from [PTSD] and don’t know it.” Participant 11 said, “It will be a five based on the nature of what we deal with every day.” 3 participants out of 16 gave a likelihood rating of three, indicating moderate likelihood. In giving a rating of three, Participant 4 said, “here we’ve run a lot of calls, and I haven’t experienced a lot of PTSD to be honest with you.”

Responses from 3 out of 16 participants are treated as discrepant cases because they indicated a perception that development of psychological disorders is unlikely, with the participants giving likelihood ratings of one or two. Participant 14 attributed the perceived low likelihood to mutual support among FRs, saying: “just say [a rating of] one. I think that [FRs] do a good job of communicating. We communicate with each other too.”

Research Question 3

Research question 3 was: How do they perceive the effect of such disorders on first responder ability to act during such emergencies? One major theme emerged during data analysis to answer the research question, including (e) Hesitation during emergencies. One minor theme also emerged during data analysis to answer the research question, including (f)

Numbness and distraction during emergencies. Table 6 indicates the number of participants who contributed to each of these themes.

Table 7

Research Question 3 Themes

Theme	Number of participants contributing to the theme	% of participants contributing to the theme
Hesitation during emergencies	9	56.25%
Numbness and distraction during emergencies	6	37.50%

Note. $N = 16$.

Theme 5: Hesitation during emergencies

Nine out of 16 participants indicated that psychological disorders caused by exposure to traumatic incidents may cause FRs to hesitate to act during emergencies. Participant 10 stated, “[PTSD] might make people more hesitant or maybe more afraid of dealing with certain situations . . . it might make people second guess their actions. . .or maybe the commands that the superiors are offering which could lead to other people being injured.” Like Participant 10, Participant 9 described hesitation at critical moments as *second-guessing*: “[PTSD] could potentially cause [FRs] to second guess or hesitate in making a critical decision which could in turn effect and injure not only themselves but someone else.” Participant 8 also referred to second-guessing: “if you went through a house fire and you get hurt the next time you go to a house fire, you have a little bit of a [likeliness to] second-guess yourself.”

Participant 4 attributed PTSD-induced hesitation to apprehensiveness: “a lot of times we have to act quickly and if you were apprehensive to take an action because of your PTSD, that's

where it could affect us.” Hesitation in its most extreme form was described by participants as *freezing*, as in this response from Participant: “I’ve slightly frozen because of what has occurred in the military; now I quickly snap out of it, but it may be that response that could get me killed or other team members killed.” Similarly, Participant 1 stated that PTSD “may cause [FRs] to freeze” during crises.

Theme 6: Numbness and distraction during emergencies

Six out of 16 participants indicated that psychological disorders caused by exposure to traumatic incidents may cause FRs to become numb or distracted during emergencies.

Participant 11 described traumatized FRs as preoccupied with past traumas rather than engaged with the present emergency: “[PTSD] will not allow officers to fully concentrate on the duties that are before them. It’s almost like they’re occupied with something that’s happened and they’re not focused on the right now.” Participant 14 expressed a similar perception, saying: “[traumatized FRs] would take that [past traumatic] situation and not be fully focused on the current situation.” Participant 6 perceived traumatized FRs as potentially, “not having focus, not having a plan upon arriving on scene.”

Participant 16 perceived traumatized FRs as potentially distracted from helping the victims of current traumatic incidents: “you are there to assist more than likely someone else, but if you’re going through your own crisis, I think that distracts you from your ability to help someone else.” Participant 5 said of the effects of PTSD on FRs during emergencies, “you become numb to certain situations.” Participant perceived traumatized FRs as vulnerable to apathy and overly narrowed focus during crises: “we develop a sense of tunnel vision. Once you develop that sense of tunnel vision, it’s like everything else around you does not matter.”

Research Question 4

Research question 4 was: What role does emergency preparedness first responder training play in decision-making behaviors of first responders? One major theme emerged during data analysis to answer the research question, including: (h) Training makes decision-making automatic. Table 7 indicates the number of participants who contributed to the theme.

Table 8

Research Question 4 Theme

Theme	Number of participants contributing to the theme	% of participants contributing to the theme
Training makes decision-making automatic	10	62.50%

Note. $N = 16$.

Theme 7: Training makes decision-making automatic

Ten out of 16 participants reported the perception that training makes FR decision-making behaviors automatic. Participant 7 spoke of training as providing a knowledge-base that FRs could revert to during crises: “we always revert back to our training, so it's going to help our ability to make decisions.” Participant 10 spoke of training as making decision-making almost reflexive:

The training becomes a part of you to the extent that it is often like a reflex in that you know, that certain things have to be done so it's not so much a part of your conscious thought. And a lot of what you find yourself doing becomes automatic.

Participant 12 spoke of training as providing instructions to guide officers during incidents:

[Training] has step-by-step the way that our officers should handle situations, whether it be dealing with a subject that's an unarmed subject, the non-lethal and lead to less lethal that you should use, all the way up to the act of the use of deadly force.

Participant 16 spoke of training as influencing instinct: “our training definitely affects our instinct and the way we handle certain situations.” Participant 15 described training as making certain reactions so automatic that officers would act on their training in spite of serious risks: “a lot of times you won't understand the heightened risk of everything until after it's over because you just go into your training.” Participant 9 described training as rendering officers able to act without reflection or instruction: “you don't have to be asked or told, you know, hey, don't do this, this and this, and it's just kind of a second nature, you know, muscle memory type thing.”

Summary

The purpose of this interpretive phenomenological study was to examine perceptions and sensemaking, decision making, and protective action behaviors associated with emergency preparedness for traumatic events such as terrorism incidents in first responders (Kuligowski, 2011); to do so in the context of first responders' potential for developing PTSD; and to understand these components as they apply in the context of traumatic in general and as they apply to first responder perceptions and behaviors associated with emergency preparedness for traumatic incidents. To achieve this, one-on-one, semi-structured interviews were conducted with 16 first responders, including firefighters, EMTs, and police officers. Four research questions guided the study.

The first research question was: How do first responders perceive protocol implementations in response to emergency preparedness for traumatic incidents? Two major

themes emerged to answer the research question. The first theme indicated that participants perceived emergency preparedness for protocol implementation in traumatic incidents to be critical. The second theme indicated that current emergency preparedness was perceived as inadequate for traumatic incidents. Emergency preparedness was perceived as inadequate either because more training was needed or because emergency preparedness could never adequately prepare first responders for traumatic incidents.

The second research question was: How do first responders perceive the development and treatment of psychological disorders as a result of exposure to traumatic incidents? Two major themes emerged to answer the research question. The first theme indicated that first responders were perceived as unlikely to seek treatment for psychological disorders developed as a result of exposure to traumatic events, often because the ethos of the relevant professions emphasized toughness and self-reliance. However, most participants indicated that if they felt they suffered from PTSD, and if they felt that their symptoms interfered with their professional competence, they would report the condition to a superior. The second theme indicated that first responders were seen as likely to develop psychological disorders as a result of exposure to traumatic incidents. Almost all 16 participants rated the likelihood of psychological disorder in these cases as likely or very likely.

The third research question was: How do they perceive the effect of such disorders on first responder ability to act during such emergencies? One major theme and one minor theme emerged to answer the research question. The major theme indicated that psychological disorders caused by exposure to traumatic incidents may cause FRs to hesitate to act during emergencies. Traumatized first responders were perceived as likely to hesitate, second-guess, or freeze when a

present event triggered trauma from a past event. The minor theme indicated that psychological disorders caused by exposure to traumatic incidents may cause FRs to become numb or distracted during emergencies. Being distracted associated with lacking focus and being unable to attend to the situation at hand. Numbness associated with tunnel vision, lack of empathy, and lack of other normal emotional responses.

The fourth research question was: What role does emergency preparedness first responder training play in decision-making behaviors of first responders? One major theme emerged to answer the research question. The major theme indicated that training makes first-responder decision-making automatic during crises. Automatic decision-making was associated with instinct, an absence of hesitation or second-guessing, reflex, and second-nature. Chapter 5 includes the interpretation and implications of these results.

The Purpose of the Current Study

First responders are part of a rapidly changing environment, which prompts the need for new research on emergency preparedness training and experiences of first responders during traumatic events. Additionally, the prevalence of (PTSD) among first responders has increased and continues to increase dramatically among firefighters, emergency medical technicians (EMTs), and police officers (Campbell, Langhinrichsen-Rohling, Sweeney, & Shropshire, 2015; Geronazzo-Alman et al., 2016; Motola et al., 2015). It is evident that the 9-11 terrorist attacks and subsequent increase in incidents of traumatic events changed the way that first responder emergency preparedness impacts the sensemaking, decision-making, and protective action of emergency management agents and agencies (Grist, 2007; Kuligowski, 2011).

Therefore, this study sought to describe the thoughts, decision-making process, and protective actions of first responders that arise during situations of emergency preparedness for traumatic events, such as shooting incidents. A sample of 16 first responders (14 were men), of various ages, was recruited. Most of the participants were firefighters or EMS workers ($n = 9$), and the rest were police officers ($n = 6$). Four research questions guided the study. The first research question aimed to describe how first responders perceive emergency preparedness protocol implementations for traumatic events. The second research question sought to understand how first responders perceive the development and treatment of psychological disorders that resulted from traumatic emergency events. The third research question sought to describe how first responders perceive the effect of psychological disorders on their ability to act and perform during emergency events. The fourth research question aimed to understand the role

that first responder emergency response training plays in first responders' decision-making processes.

Methods and General Results

The study's semi-structured interviews included 15 questions and lasted 45 minutes on average. Questions included feelings towards emergency preparedness protocol and trainings, as well as perceptions about PTSD and its potential impacts on first responders. All interviews were recorded and transcribed. The recording transcripts were then transferred to NVivo 11 for qualitative coding and analysis. In this study, I used interpretive phenomenological analysis (IPA). Figure 2 indicates the over 130 data segments of the transcripts, codes, and their occurrence frequencies. Participants described various traumatic, emergency situations, ranging from those involving purposeful and accidental deaths and injuries to unexpectedly hostile and violent situations. Protocols followed by first responders in this study include the instant command system, EMS protocols, and the national incident management system. Overall, seven themes emerged that addressed the four research questions:

- a. Emergency preparedness is perceived as critical.
- b. Emergency preparedness is perceived as inadequate.
- c. First responders are unlikely to seek treatment.
- d. The development of psychological disorders is perceived as likely.
- e. There can be hesitation or feelings of "freezing" during emergencies.
- f. There can be numbness and distraction during emergencies.
- g. First responder training helps to make decision-making automatic.

Interpretation of the Findings

Research Question 1

The results from this study showed that, in response to research question one, the first responders felt that emergency preparedness training for traumatic events was extremely important. Some participants reported that they are well-prepared and well-equipped, and continue to attend various trainings, including the Federal Emergency Management Agency (FEMA) disaster preparedness, stress management, and advanced Emergency medical services training. Others, however, reported that trainings were inadequate. This outcome supports the findings from previous research such as that by Bruno (2016), Liu et al., (2013), and Smith (2015) that indicated the lack of training and protocols. Additionally, in this study, first responders reported the need to prepare and remain proactive as much as possible, but sometimes first responders do not receive the buy-in needed for necessary trainings.

In general, emergency preparedness training helps to set the intentions for first responders, aligning with the TPB. The intentions, in turn, assist first responders with rational decision-making, including making decisions about personal safety, and making decisions where the life of others is at risk, and doing so quickly, with limited information. Additionally, the experiences of first responders fit with some components of the protection-motivation theory; specifically, intentions and threat appraisal seem crucial for understanding and following emergency protocols; however, responses were limited in regard to coping appraisal.

Research Question 2

In regard to the second research question, results indicated that first responders feel they are likely to develop psychological disorders as a result of traumatic emergency situations;

however, the participants also reported that they were unlikely to seek or receive treatment for these disorders. Notably, most would tell their supervisor if they felt their professional competence was being impacted by such psychological disorders but were unlikely to seek medical help, even though most participants voiced that some type of counseling or treatment should be received. Notably, reporting PTSD was not mandatory for the first responders in this study. First responders reported that only recently have people acknowledged that first responders are at risk for developing PTSD; the disorder lacks clarity of understanding because people can be affected so differently.

In this study, participants reported that PTSD could be problematic if first responders do not admit or acknowledge they have this potential diagnosis. Some participants felt that receiving treatment for PTSD decreases their sense of pride; obtaining treatment remains a problem because the department that would provide services is understaffed. Reasons that first responders may develop PTSD included seeing graphic, violent events because of the nature of the stressors they deal with on a day-to-day basis. The participants in this study did not address how attitudes and intentions regarding mental health treatment could be changed, although agreement indicated that more counseling, coping strategies, and resources need to be provided to first responders after traumatic emergency situations. This finding indicates that protection-motivation theory and TPB may not offer the best explanation for the mental health experiences of first responders. This finding supports other research that found the protection-motivation theory applied to health-related behaviors (Milne, Sheeran, & Orbell, 2000).

Research Question 3

When assessing the third research question that first responders felt psychological disorders could hinder their ability to act during emergencies; specifically, the participants reported that they might hesitate, seem distracted, withdrawn, confused, depressed, or stressed, or be unable to focus. Instead of being able to focus on the situation at hand, participants responded that a first responder with PTSD would likely be focusing on the traumatic situation that occurred in the past. Participants also mentioned the lack of empathy and sympathy as a symptom that first responders with PTSD might exhibit. Participants suggested that PTSD may make responders freeze, worry more, or be more aggressive and argumentative. As one participant noted, first responders cannot act during a crisis if they are going through a crisis themselves.

Also, participants noted that PTSD might impact first responders' awareness of their environment or surroundings, which could ultimately impact their safety, their crew's safety, and the safety of the individuals in need. Participants suggested that the severity of the impact of traumatic, emergency situations on the mental health of first responders really depends on the person. Participants also felt that PTSD could impact not only their ability to do their job, first responders' personal lives; for instance, first responders might have difficulty sleeping at night or might have marital or relationship problems. Participants noted that first responders might be reluctant and afraid to enter situations similar to traumatic events encountered in the past. Additionally, participants voiced a need for a therapeutic system in place to help first responders after a traumatic event so that they can move forward and be successful at their job.

These results suggested that first responders are aware of the norms, such as stigmas associated with receiving mental health treatment and the pressures to perform behaviors, such as

making quick decisions to do what is best for themselves, their crew, and the individuals at need while following protocol. Additionally, some participants responded that they felt if they could tell that their experiences were negatively impacting their health and ability to perform their job (perceived behavior control), they might seek treatment. This finding suggests that first responders may not be able to make fully rational decisions in regard to accepting and seeking mental health treatment when needed, aligning with decision-making theory. Participants noted PTSD and other stressors resulting from traumatic situations cloud first responders' judgment and ability to make decisions and focus in high stress emergency situations. This outcome is very similar to the proposition of decision-making theory that cognitive biases make increase the difficulty to make rational decisions. Decision-making theory also highlights the importance of assessing alternate behaviors or decisions depending on their consequences. Participants in this study noted that if PTSD negatively impacted their job, to the point where they could not perform their job efficiently (consequence), then they may seek out treatment.

Research Question 4

In regard to the fourth and final research question, participants felt that emergency preparedness training was important for helping the decision-making process; specifically, helping to make decisions more automatic during a traumatic event. Furthermore, training could help reduce hesitation and distraction during emergency situations and could also help first responders with their split-second decisions, in situations where actions need to be decided immediately. Additionally, participants reported that training helps first responders to respond efficiently and be confident in their decisions and actions and helps them know that they did the

best to fix whatever problem came their way. Participants reported that training often occurred at the basic level and included reviewing past emergency situations and assessing the likelihood of the event re-occurring in their area. Participants also noted that preparedness training is critical for deciding and acting in ways that are best and safest for the response crew and the individual(s) in need, and ultimately for increasing patient survival. Importantly, participants indicated that gaining experience in the field is also important for making decisions as a first responder.

The experiences of first responders fit with some components of the protection-motivation theory; specifically, intentions and threat appraisal seem crucial for assessing the emergency situations and making decisions for the safety of self and others. However, coping appraisal is not as evident in the responses from the first responders in this study. In contrast, the sense-making theory seems to fit very well with first responders' experiences with the impacts of emergency preparedness training. For instance, participants recounted that they had to constantly think through complex emergency events and categorize events cognitively to ensure that they could then follow the correct protocol. In other words, protocols and preparedness trainings helped the first responders to be able to assess the situation, assess the external cues of the situations, identify similarities to previous situations, and act according to policy in a way that was safest for them, their crew, and individuals in need.

Limitations of the Study

Although the current study has much strength, limitations also exist. Some possible limitations of the study include questionable homogeneity of the sample size (Smith, Flowers, & Larkin, 2009); the findings from this study emerged from a small sample of first responders, and may not

be generalizable to larger populations. However, this sampling size is common in qualitative research and allows for the in-depth examination of a phenomenon that would not be fully captured from quantitative methods. Additionally, a limitation involves the possibility that interview questions, and my responses may be biased because the I created the interview guide and included responsibility for reacting to participants' responses as they occurred (Anderson, 2010); the quality of the data is heavily reliant on the researcher, increasing the possibility of confirmation bias.

To combat this bias, then I created the interview guide in advance and followed the guide closely as not to give too much personal feedback and allow the participant to dominate discussions. The researcher also prompted participants to explain or describe what they meant in more detail rather than attempting to guess. Another limitation of this study (and other qualitative studies) involves the inability to replicate this study because of the use of an open-ended interview guide (or a qualitative measure), rather than a quantitative measure or survey.

Similarly, the researcher relied on the first responders to be open and honest; however, there is the risk that participants responded in ways that they thought would make them perceived in a positive way, fulfilling social desirability bias. Social desirability refers to the bias of individuals to respond in socially acceptable ways, which may or may not be honest (e.g., Kim & Kim, 2016). Interestingly, the participants' responses were in sync and similar during the interviews. Additionally, most participants noted they do not think that most first responders would seek mental health treatment or services even if needed, which is the opposite of a response that one would expect from participants impacted by social desirability bias, suggesting that the participants were open and honest.

Another type of bias inherent in qualitative research such as the current study includes habituation bias and acquiescence bias. Habituation bias refers to when participants in qualitative research essentially respond to all questions similarly worded (Friedman & Foster, 2008). Acquiescence bias refers to the tendency for individuals to respond with yes / no answers or responding in ways to seem agreeable (Savalei & Falk, 2014). To prevent these biases, the researcher used the interview guide which comprised of a select number of distinct questions, and when participants provided brief, vague responses, the researcher prompted for more explanation.

Recommendations

This study had many strengths, including obtaining detailed, open-ended responses from interviews that would have been missed by using quantitative measures alone. Various themes emerged, apparent across all the participants' responses, indicating the results are likely to be very reliable. The results from this study may provide information to policymakers and trainers about the usefulness of first responder protocols and the effect of emotional factors on emergency preparedness and emergency response tactics. Additionally, this study offers feedback that can be used for future trainings for first responders.

The results from this study indicated that emergency preparedness trainings are valuable resources to first responders; most notably, trainings to help with the decision-making process during traumatic and stressful emergencies. However, further research on emergency preparedness and the impacts of PTSD remains needed. For instance, findings from this study suggested that future research may include an examination on the relationship between resiliency and disaster preparedness among first responders with and without PTSD. Future research may

also benefit from addressing gender differences in feelings toward disaster preparedness and the impacts of PTSD because this study involved mostly male first responders. Also, findings indicated that preparedness trainings varied depending on location; therefore, a need for more research exists on first responders in various geographic locations throughout the nation.

Implications

Implications for First Responder Trainings

The results for this study shed light on many opportunities for positive social change by promoting and strengthening trainings for first responders. For instance, findings indicated that age may play a role in the impact of PTSD on first responders; specifically, older first responders included the perception as less likely to receive treatment for PTSD compared to younger first responders. Furthermore, trainings may need to be tailored to first responders depending on their age and openness to receiving mental health treatment. In general, agreement among participants indicated that constant training and continuing education was very important for first responders, suggesting that this practice should continue.

The findings also indicated that resiliency training may also be an important component to incorporate into disaster preparedness training for first responders. Participants noted that the credibility of those providing the training is important, and this training should be considered for future trainings. Additionally, findings indicated that trainings for first responders on how to cope and deal with stressors is highly critical for their own health and for their job performance; however, these types of trainings seemed lacking and need to be incorporated more regularly as a normal practice. As noted by participants, these types of trainings should involve methods for

self-coping, how to talk about stressors and mental health issues with one's family, and how to deal with stressors and mental health issues as a first responder unit.

Implications for Promoting Mental Health Treatment

This study also highlighted a weakness in first responder protocols regarding self-care after traumatic emergency situations, the lack of treatment readily and immediately available, and first responders' lack of willingness and openness to receive treatment. Notably, participants indicated that receiving mental health treatment may reduce first responders' sense of pride; one participant even noted that he/she personally would not receive treatment because he/she is supposed to be tough, and another said that seeking treatment would make him/her seem weak. Therefore, trainings concerning the importance of treatment and counseling for all first responders may need to address biases and negative stigma associated with receiving such services.

Unexpectedly, the results from this study did not align with the protection-motivation theory because participants did not discuss motivation and attitude change. Participants did, however, discuss how trauma and PTSD can have impacts that are different for each person and that first responders have first to admit and acknowledge the negative impacts of trauma and PTSD and their need for treatment; this finding aligns with the individual intentions and threat appraisal component of protection-motivation theory.

The first responders in this study also noted the importance of coping and having someone to talk to about their experiences, which aligns with the coping appraisal component of protection-motivation theory. Therefore, this study showed that the components of protection-

motivation theory are apparent in first responders and their experiences with emergency trainings and traumatic events. However, the need exists for further research that includes investigation of how the protection-motivation theory can be utilized to motivate first responders to seek treatment and be more open about mental health needs, especially considering that the vast majority of participants reported they did not think that, if needed, they would seek treatment and did not think the others in their unit would seek treatment.

Conclusion

In summary, first responders are in a constantly changing and stressful environment, which prompts the question of how preparedness efforts and risks of PTSD impact them and their job performance. Furthermore, this study sought to describe the thoughts, decision-making process and protective actions of first responders that occur during situations of emergency preparedness for traumatic events, such as shooting incidents. A semi-structured interview was administered to 16 first responders in Atlanta, Georgia, the majority of whom were male; first responders included firefighters, EMS, and police officers. The interview guide contained 15 questions, and on average, interviews lasted 45 minutes long. There were four research questions in this study:

RQ1. How do first responders perceive protocol implementations in response to emergency preparedness for traumatic incidents?

RQ2. How do first responders perceive the development and treatment of psychological disorders as a result of exposure to traumatic incidents?

RQ3. How do they perceive the effect of such disorders on first responder ability to act during such emergencies?

RQ4. What role does emergency preparedness first responder training play in decision-making behaviors of first responders?

This study was driven by protection-motivation theory, the TPB, sensemaking theory, and decision-making theory. Recorded interviews were transcribed, coded, and analyzed in NVivo 11 using interpretive phenomenological analysis. Results offered mixed support for the applicability of these frameworks to first responders' experiences with preparedness training and PTSD. There were seven key themes in this study:

- a. Emergency preparedness is perceived as critical.
- b. Emergency preparedness is perceived as inadequate.
- c. First responders are unlikely to seek treatment.
- d. The development of psychological disorders is perceived as likely.
- e. There can be hesitation or feelings of “freezing” during emergencies.
- f. There can be numbness and distraction during emergencies.
- g. First responder training helps to make decision-making automatic.

Overall, this study has many implications for first responder trainings, as well as for the promotion of mental health treatment among first responders. Preparedness trainings are critical to first responders but are lacking; these trainings also need to be continuously offered. Trainings and protocol help first responders make the best decisions for themselves, their crew, and the individuals at need; specifically, the training and protocols can help first responders make quick decisions, make decisions in stressful situations, and make the decision-making process more automatic. Additionally, this study revealed that first responders agree regarding their likelihood to develop PTSD because of the nature of their work and that PTSD could

significantly impact their ability to perform on the job; however, first responders are not likely to seek treatment, for reasons such as pride and stigma associated with mental health services. A need for additional trainings exists on how to cope with stress and trauma and to promote the receipt of mental health interventions. Future research should include an examination of differences in first responders' experiences with preparedness trainings and PTSD based on gender, age, and geographic location. Benefits may also exist for future research to address how first responders can avoid the negative impacts of daily traumatic emergency situations, specifically the impacts of resiliency.

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Appendix A: List of Abbreviations

The following abbreviations and acronyms are used interchangeably in the study:

Emergency Management Agency (EMA)	Emergency Decision Making (EDM)
Emergency Medical Technician (EMT)	Emergency Operations Center (EOC)
Federal Emergency Management Agency (FEMA)	Federal Response Plan (FRP)
Georgia Emergency Management Agency (GEMA)	Georgia Emergency Operations Plan (GEOP)
Heritage Emergency Response Alliance (HERA)	Incident Command System (ICS)
Interpretive Phenomenological Analysis (IPA)	Local Emergency Operations Plan (LEOP)
Metro Atlanta Ambulance Service (MAAS)	Multi-Agency Coordination Systems (MACS)
National Incident Management System (NIMS)	National Response Plan (NRP)
Posttraumatic Stress Check List (PCL)	Public Information Systems (PIS)
Protection Motivation Theory (PMT)	Post-traumatic Stress Disorder (PTSD)
World Trade Center (WTC)	