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Exploring the Impact of Disaster Response Preparedness by the New York State Military Forces to the World Trade Center September 11, 2001, Terrorist Attacks

Robert L. Wolf
Nova Southeastern University, b-p-wolf@outlook.com

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by
Robert L. Wolf

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Approval Page

This applied dissertation was submitted by Robert L. Wolf under the direction of the persons listed below. It was submitted to the Abraham S. Fischler College of Education and School of Criminal Justice and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Indiana Robinson, EdD
Committee Chair

Marcia O'Neil, EdD
Committee Member

Kimberly Durham, PsyD
Dean

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November 22, 2019
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Abstract

Exploring the Impact of Disaster Response Preparedness by the New York State Military Forces to the World Trade Center on September 11, 2001, Terrorist Attacks, Robert L. Wolf, 2019. Applied Dissertation, Nova Southeastern University, Abraham S. Fischler College of Education and School of Criminal Justice, Keywords: disaster response preparedness, heuristics research methodology, content analysis, 9/11 attacks, World Trade Center, New York State military forces, and archival interviews

The problem identified in this study concerned the impact of disaster response preparedness (DRP) from the past, present, and future perspectives. The study explored the experiences of four survivors from the 1993 WTC bombing, the effectiveness of seven New York State Military Forces (NYSMF) deployed to Ground Zero (GZ), and perspectives of five Emergency Medical Services (EMS) professionals on DRP operations going forward from 9/11.

Following an explorative heuristic research approach, the study utilized a qualitative and content analysis methodology (both qualitative and quantitative aspects) to investigate the problem using published archival interviews from the informants. Minimally, hypothesis testing, and descriptive and inferential statistics formed part of the data analysis.

The results showed that the survivors of 1993 attack on the WTC experienced no interaction with first responders and were without DRP guidance. The NYSMF informants responded within 24 hours of the 9/11 WTC attacks, but were instructed to play a determinate role, as military force was deemed not appropriate to the situation on the ground. NYSMF augmented the roles of the New York Police Department (NYPD) and other first responders by conducting perimeter security at GZ. The EMS informants developed and implemented contingency plans to study DRP, and trained organizations and municipalities in the preparation for future disasters.

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Chapter 1: Introduction

Statement of the Problem

Ippolito (2014) described the September 11, 2001 (9/11) attacks on the United States (U. S.) as a "unique fusion of transnational criminal conspiracy and irregular warfighting…an invasion" (Para. 15). The scene on 9/11 at the World Trade Center (WTC) in Manhattan, New York City was chaotic immediately following and weeks later. The response at all levels of government was not able to avert the destruction of city blocks, and the constant cloud of a toxic plume of asbestos, glass, concrete, and gas that filled the air at the WTC also known as GZ (Biello, 2011; Crane, Levy-Carrick, Crowley, Barnhart, Dudas, Onunoha, Globina, Haile, Shukla, & Ozbay, 2014). Klitzman and Freudenberg (2003) suggested the 20,000 tons of asbestos was an assault on the environment. There were an estimated 2,966 deaths. Most were innocent victims that included the flight crews, passengers, and first responders. The 19 hijackers were also killed as per their objective (Bergen, 2018). Adams Otis (2016) reported tenfold more injured most due to breathing in the "poisonous particulate" (Para. 12) dust. These numbers do not include the incident stress/mental trauma resulting in Posttraumatic Syndrome Disorder (PTSD) suffered by the responders and local citizen as well as visitors during both the rescue and recovery phases in NYC on and following September 11, 2001 (Bergen, 2018; Crane et al., 2014).

The immediate response to the attacks were sourced from the Fire Department of New York (FDNY) and Emergency Medical Technicians (EMT's], the New York City Police Department (NYPD), and the Port Authority Police Department (PAPD) who were trained and equipped with the proper respirators and trained in the appropriate use of the

equipment (Crane et al., 2014). Many of the volunteers at the scene were not as equipped or trained as well as the FDNY to include the New York State Military Forces (R. Rotanz, personal communication, 2019).

Chapter 1 identified the existing problem of importance to this study and outlined the phenomenon of interests and the background and justification for the study. Further, the chapter identified the targeted audience, the setting, the researcher's role, and power base to conduct the study, and the deficiencies identified for the study. The chapter concluded with a definition of terms and variables relevant to this content analysis study and presented the purpose of the study.

A disquieting supposition was the lack of disaster response preparedness (DRP) displayed by the NYSMF (Bondarenko, 2014). Arkin and Windrem (2016) stated that not only were the NYSMF not adequately prepared to handle a disaster of this level, neither were many other governmental operatives including the President of the United States, the Pentagon, and designated survivors. Almost everyone in the authoritative position was in a state of flux and not follow protocol. The President's communication equipment and procedures were inadequate. The resulting confusion prevented the President's ability to communicate effectively with cabinet and international contemporaries (Darling, 2010). According to Arkin and Windrem (2016), the lack of command and control almost led to a nuclear confrontation with Russia. The WTC, located in Manhattan, has seven buildings in its confines with OEM residing in Building 7. New York City's Office of Emergency Management (OEM) Command and Control located in WTC, Building 7, that housed OEM's operations became inaccessible (Arkin & Windrem, 2016). The control center located in Building 7 of the WTC complex was

destroyed in the early hours of the attacks. OEM ceased to exist without its clear command and control apparatus during the first hours of the attack during 9/11 (Lipton, 2002). Gay, Mills, and Airasian (2009) stated that maps "provide contextual insights" (p. 394) vicariously for the general population to understand the study and also act as a "reflective tool" (p. 394) for those who have. See Figure 1 for a map of the buildings that comprise the WTC prior to the 9/11 terrorist attacks.

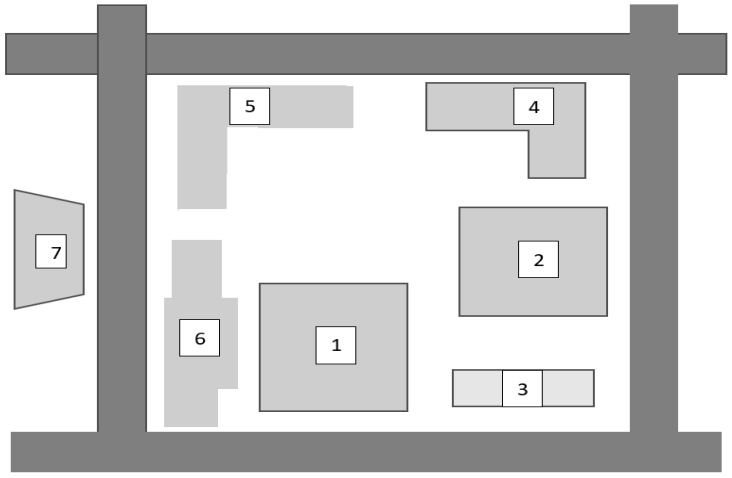

Figure 1. Map of the World Trade Center Buildings. Adapted from Simon, R., & Tepeman, S. (2001, November). The World Trade Center attack: Lesson for disaster management. *Crit Care, 5*(6), 318-320. doi:10.1186/cc1060

As a result, the New York Police Department's (NYPD) Academy became the acting headquarters for the OEM staff. The OEM command team were without maps and communication equipment which significantly challenged the command, control, and coordination of the 150 agencies of the City of New York (W. Lockridge, personal communication, September 11, 2001). The 343 members of the Fire Department of New York City (FDNY) including fire-fighters paramedics and fire chiefs responded and were lost in the twin tower collapse (W. Lockridge, personal communication, September 11, 2001).

WTC encompassed part of the NYC financial district and the NYC maritime center. On September 11, 2001, Ground Zero, located in lower New York City (NYC), was a source of soot, hydrochloric acid, metals, asbestos, fiberglass, glass, and other toxic chemicals that spread poison to the residents, rescue, recovery, and construction workers (Crane et al., 2014). In August of 2001, only a few weeks before the 9/11 Terrorist Attacks, the New York State Military Forces (NYSMF) welcomed aboard their new Commissioner of the Division of Military and Naval Affairs (DMNA), Major General Thomas P. Maguire, Jr. The Commissioner of the Division of Military and Naval Affairs (DMNA) also known as The Adjutant General (TAG) is "… responsible for the command, control, and leadership of all militia forces assigned to the State of New York" (National Guard Bureau, 2007, Para. 1).

Phenomenon of Interest

Exploration of the impact of DRP in the wake of the 9/11 attacks at the WTC is an essential element of timely mitigation in rescue and recovery operations (R. Rotanz, personal communication, September 5, 2001). Ippolito (2014) argued that the federal government failed to protect New York City in what was termed "government impairment as well…as inability" Para. 16). The NYSMF is a subset of the U. S. Armed Force at the state level. This section explains where the NYSMF fits into the larger organization. According to the Department of Defense (DOD) (2015), active duty service branches of the military include Department of Defense's (DOD's) Army, Navy, Marine Corps, and Air Force as well as their respective reserve components are all classified as federal and or Title 10 components of the Armed Forces (Archer, 2017; 10. U. S. C., 1956). The Title 32 components of the military include the Army National Guard and the

Air National Guard, and the organized militia (32. U.S.C., 1956). The New York State Naval Militia, that is normally regulated by the state as well as the New York State Guard are state entities (Consolidated Laws of New York State/MIL, 2019). The Army and Air National Guard can also be called up under Title 10 when federalized by the Commander in Chief (10. U.S.C., 195632). The Coast Guard and Coast Guard Reserve are regulated jointly by both the Armed Forces and the Department of Homeland Security (14. U.S.C., 1946).

The total military force is comprised of active duty members and selected reserve members (this reserve group trains with the active duty members) totaling 2,120,505 men and women (DOD, 2015). Of this number, 1,759,755 or 83% are enlisted members and 360,750 or 17% are commissioned officers and 1,763228 or 83% are males with 360,750 or 17% females. An analysis of the age demographic shows that most members, 60.9% or 1,290,441 are age 30 or under and that 39.1% or 830,064 members of over age 31.

Table 1

United States Military Forces' Demographic Characteristics

Total force members					
1,759,755	360,750	1,763228	360,750	1,290,441	830,064
Active duty members					
1,070,653	23,790	1,100,030	201,413	853,693	447,750
Ready reserve					
942,663	158,690	N/A	N/A	N/A	N/A

Note. Age 30- = age 30 and under, age 31+ = age 31 and over. N/A data not available. Source: Patten, E., & Parker, K. (2011, December 22). *Women in the U. S. military: Growing share, distinctive profile.* Retrieved from http://www.pewsocialtrends.org/ 2011/12/22/women-in-the-u-s-military-growing-share-distinctive-profile/

In separating out the active duty members from the select reserve members, a total of 1,301,443 individuals are represented as active duty members with 1,070,653 or 83.3% being enlisted and 23,790 or 17.7% being officers with 1,100,030 or 84.5% being males and 201,413 or 15.5% being females. The age breakdown of active duty members shows that 853,693 or 65.6% are age 30 and under and 447,750 or 34.4% are age 31 and older.

The reserve and guard members are divided into three components: Ready reserve, stand by reserve, and retired reserve. The ready reserve is further broken down into the select reserve, the individual ready reserve, and the inactive national guards. See Table 1 for a breakdown of the military forces' (partial) demographic characteristics. The ready reserve is comprised of 1,101,353 members of which 85.6% or 942,663 are enlisted, and 14.4% or 158,690 are officers (DOD, 2015). As seen in Table 1, the representation of total women in the military ranges from 17% down to 15.5% for active duty members.

The impact of DRP by survivors of the 1993 bombing at the WTC, the involvement of the NYSMF as first responders at the WTC GZ during the 9/11 attacks, and the EMTs' future perspectives on DRP was the phenomenon to be studied. The viewpoint of survivors of the 1993 terrorist attack on the WTC was portrayed in this study as a point of reflection into past happenings at the WTC. The NYSMF, considered as the present for this study, responded to the attacks on 9/11 with many volunteers and nonorganic units and were ill-equipped and without specific training for the magnitude of this disaster (R. Rotanz, personal communication, January 17, 2019). Many donations from corporations and small businesses were creating logistical log jams requiring manpower and additional storage facilities (Baione, 2017; Fanning & Goldenberg, 2001).

The toxic environment and the critical incident and stressors of death and decay were creating significant health issues (Adams & Boscarino, 2005; Center for Disease and Prevention, 2004). Factors such as toxins, concrete, asbestos and other destructive elements contributed to a higher responder casualty rate (Crane et al., 2014). The perspectives of emergency management leaders and trainers who subsequently studied and researched 9/11, were the informants in the future aspect of the study.

Background and justification. The then mayor of New York at the time of the attacks had demonstrated, by some, outstanding leadership through the difficulties during the 9/11 crises, but there were actions and/or statements that were contrary to some of the facts (Lipton, 2002; Powell, 2007). The mayor's declaration in 2002 was that "the city was prepared on 9/11" (Lipton, 2002, para. 1). Critics of the mayor were not convinced NYC, under the mayor's watch, was fully prepared for the attack. Specifically, an issue arose prior to the attack that the mayor insisted that the OEM Command and Control would be home in Building 7. The fact Building 7 was destroyed early in the attack provided the critics an opportunity to marginalize the Mayors leadership (Lipton, 2002). Crane et al. (2014) reported 60,000 survivors and responders to the WTC are currently in long term monitoring program for health risks. Doctors at *Mount Sinai Hospital* continue to see asthma, chronic bronchitis, kidney disorders, and cancers to include leukemia (Senior, 2004). Families who lost loved ones in 9/11 attacks may argue the city was not prepared for 9/11 as 1,717 families would not receive the remains of their loved ones from the WTC disaster (Lipton, 2002). Many political observers saw the Mayor's stoic and yet empathetic leadership through the disaster as the proper measure of calm and

presence as the FDNY. NYPD, PAPD, EMTs, NYSMF, and other first responders deployed around ground zero (Powell, 2007).

Rashbaum (2008) reported that a study conducted in 1998 revealed significant opposition to placing the OEM Control Center in Building 7 of the WTC complex. The study was performed by the officials of the NYPD and the Secret Service and their concerns centered from the building's location relative to the proximity to the trade towers, a 1,200-gallon diesel tank placed on the twenty-third floor of Building 7, easy access to the underground garage and delivery bays, adding to the report the building was also reported as a terrorist target, and its control center location was above and next to a *Consolidated Edison* (Con ED) substation (Rashbaum, 2008). The decision by then-mayor for New York City, ordered that the OEM command center be resident in Building 7. The decision was reportedly based on that Building 7 was within walking distance of New York City Hall (Rashbaum, 2008).

New York City OEM was preparing and conducting tabletop exercises as early as of 1995 (L. Murphy, personal correspondence, September 14, 1995). Training for threats from Weapons of Mass Destruction (WMD): Chemical, biological and nuclear type scenarios were used (L. Murphy, personal correspondence, September 14, 1995). This training was hosted by OEM and conducted for NYPD, FDNY and adjacent emergency operations leaders from counties adjacent to New York City. The NYSMF were not invited to this training (L. Murphy, personal communication, September 14, 1995). The focus of this training was based on the lessons learned from the first bombing of the WTC in February 1993 (Hinman & Levy, 1993). Significant recommendation gleaned from the evacuations of the towers during the 1993 bombing were studied and

implemented in the 9/11 attacks. First responder guides to assist and calm people during the evacuation were stationed appropriately, stairs were laced with illuminating strips, additional lighting was provided in the stairwells, and more acute detailed plans for evacuations were developed and conducted with regular practice drills. The lessons learned help to expedite the safe and organized evacuation of 13,000 – 15,000 people from both towers (R. Rotanz, personal communication, September 10, 2001). It should be noted that the evacuees were located below the planes' impact area on the towers during the WTC attacks (CDC, 2004). Evidence of best practices utilized in the evacuation of both towers at the WTC on 9/11 was noteworthy (R. Rotanz, personal communication, January 17, 2019).

A vacuum of leadership was reported and assessed by critics for all the government agencies involved with the first few days of the disaster including the city, state and federal leadership (Powell. 2007; Rashbaum, 2008). OEM headquarters was displaced several times from the moment the planes hit the WTC towers, and again when their makeshift command post became untenable when the towers fell and again moved to the NYPD's Police Academy. Within the first week, the OEM Command Center was finally established on Pier 92 on the Hudson River for the rest of the recovery phase. All the maps and electronic command and control systems were lost, and there was very little interoperability conducted prior to, during, and immediately after the initial attacks (Merchant, Khandelwal, Haldankar, & Kamath, 2011). This was the command and control environment in which the NYPD, FDNY, PAPD, EMTs, NYSMF, and thousands of volunteers worked during both rescue and recovery operations (R. Rotanz, personal communication, January 17, 2019).

In the first few hours of the collapse of the WTC, a vacuum of response was initially filled with hundreds of volunteers coming from many different professions: NYSMF, FDNY, PAPD, EMT's, doctors, nurses, civilians, reservists, and ironworkers rushed to the scene to help (E. G. Klein, personal communication, September 8, 2001; Simon & Tepeman, 2001). The New York State Governor activated the NYSMF to provide civil support to the City of New York (Fanning & Goldenberg, 2001). The media was focused mainly on the contributions of the NYPD, the FDNY, EMTs, and other emergency personnel as first responders. Sparse information was reported relative to the NYSMF responding in high numbers and providing a variety of services within hours of the 9/11 attack on the WTC (Baione, 2017; Fanning & Goldenberg, 2001).

Prior NYSMF DRP experience. Volatility, Uncertainty, Complexity, and Ambiguity (VUCA) is a military term, originating in the early 1990s, describing the new unpredictable type of disaster or conflict that the United States would be currently experienced (Bennett and Lemoine, 2014; Kraaijenbrink, 2018). The NYSMF had been active in the many types of VUCA missions during the 1990s (Bennett & Lemoine, 2014). Two simultaneous Northeastern Blizzards in November 1995 and the corresponding floods from the melting snow in January 1996 immobilized large portions of the state. Tropical Storm Floyd, the *TWA Flight* 800 Recovery Operation, and the Year 2000 (Y2K) cyber threat preparation had challenged the NYSMF thereby making the men and the women better for the experience (P. McCoy, personal communication, December 31, 2000). The lessons would not translate or relate to the preparation and equipment required for the 9/11 disaster. (Fanning & Goldenberg, 2001). The reporting and circumstances of the response to the 9/11disaster brought a sense of urgency to future

response in respect to this type of mass destruction and thereby necessitating the need for study and improvement on the DRP by the NYSMF (R. Rotanz, personal communication, January 17, 2019). A significant benefit of this research improved the effectiveness of future responders to a 9/11 type disaster. Although there are and there have been improvements in DRP, the efficiency and the appropriateness of the improvements had not been codified (R. Rotanz, personal communication, January 17, 2019).

Global attacks. Terrorism is a global threat and not only confined to the United States (DeLisi, 2005; McCann & Cordi, 2012; Roser, Nagdy, & Ritchie, 2018). Historically, "terrorism is not a 21st century phenomenon and has its roots in early resistance and political movements" (Roser, Nagdy, & Ritchie, 2018, Para. 1). Since the first century AD, terrorists have been plaguing societies around the world including Africa (Congo, Nigeria, Somalia), Asia (Philippines, India, Pakistan, Sri Lanka, Thailand, Nepal), Europe (Turkey, Spain, Russia), the Middle East (Afghanistan, Israel, Iraq, Egypt), and North (U. S.), Central (El Salvador), and South America (Colombia, Peru, Chile) (Roser, Nagdy, & Ritchie, 2018). The number of fatalities around the world total over 40,000 individuals with 9/11 earmarked as one of the deadliest single incidents in history. In comparing pre9/11 and post9/11 terror attacks, Roser, Nagdy, and Ritchie (2018) accounted for a tripling of the number of attacks perpetrated based on a single country – from nine incidents from 1970 to pre9/11 in Colombia to 26 incidents from 9/11 to 2008 in Iraq. The number of airline hijackings peaked in the late 1960's to approximately 75 and dwindled down to almost zero in 2014.

Role of the researcher. The researcher is a 20-year Marine Corps veteran. The last Marine Corps deployment was as the Operations Officer for a Marine Expeditionary

Unit, Special Operations Capable, having taking part in Mediterranean operations to include Desert Storm, Provide Promise and a NATO Tactical Recovery of an Aircraft and Personnel mission, in Bosnia. In 1995, the researcher joined the NYSMF and was appointed the Deputy Commander of Operations for the NY State Naval Militia (NYNM). The researcher had taken part in the majority of the VUCA disasters experienced by New York State in the mid-1990s to include the TWA Flight 800 Recovery and the WTC disaster during 9/11. Arriving on the scene of the WTC within hours of the attack, the writer was embedded with the NYC OEM with the first wave of NYNM volunteers during the first 10 days of the WTC. In 2008, the researcher was promoted to Major General in the NYSMF and commanded the NYNM during Hurricanes' Irene and Sandy. The researcher retired from the NYSMF in December 2014 culminating 20 years of state service. During the 9/11 recovery phase, April 2002, TAG sponsored an NYSMF combination after action symposium and award ceremony in the Park Avenue Armory. The researcher participated in this conference. The agenda was to determine best practices, alert selected units to prepare for overseas deployments, and to recognize and award the first wave of deserving NYSMF individuals with medals. A research report, dedicated to the researcher, was conducted by S. C. Ippolito (2014) on the New York Naval Militia titled: Two if by Sea: The Nautical-Legal Context of Homeland Security, covering the naval militia historically up to and including 9/11.

Setting. The setting for this archival study is the place where the data was collected (Hesse-Biber, 2017) – in the offices of the four *National Guard armories* in New York State. The interviews were conducted by four different military personnel on behalf of the Historical Division of the National Guard Bureau and the Center for

Military History. The informants reported on their lived experiences as National Guardsmen during the initial operations at Ground Zero. Simon and Tepeman (2001) described NY as the largest city in the U. S. and as being a unique space inhabited by over 8 million people who reside in five boroughs: Manhattan, Brooklyn, Bronx, Queens, and Staten Island. Manhattan alone has a population of 1.5 million living in 34 square miles making Manhattan one of the most densely populated cities in the U. S. (Simon & Tepeman).

Thirty interviews relative to NYSMF were noted in the setting's database but none were women. U. S. women have served in every war since World War II, Vietnam, and the post9/11 wars (Patten, 2011) and in World War 1 also according Hays (n.d.). Prior to that, going back to the Crimean War (1850s), Florence Nightingale served as a nurse to care for injured soldiers (Verhern, 2018). From as early as the American Revolutionary War also known as the War of Independence (1775-1783), women have had been serving the U. S. on the battlefield. Deborah Sampson disguised herself as her brother and fought among men (Hays, n.d.) and female Buffalo Soldier Cathay William also disguised herself as a man under the pseudonym William Cathay so she too could serve in 1866 as part of the 9th Calvary regiment in New Orleans, Louisiana (History.com, 2018; McCulloch, 2012). Patten (2011) surmised, the "numbers women on active duty in the military have risen dramatically since the beginning to the all-volunteer force" (para. 1) from over 42,000 enlisted women in 1973 to nearly 170,000 in 2003 (a rise of over 400%) and women as commissioned officers rose from 12,750 to over 35,000 in the same 30-year span or a rise of nearly 300%. Women have also served in all branches of the military but have shown a preference for the air force over men (31%

compared to 22% of men) and twice less likely to serve in the marine corps (only7% compared to 16% of men). Hagen and Carouba (2008) were outraged at the lack of credit given to women as first responders at GZ and cited two females first responders who also lost their lives on 9/11 among the many male first responders. The authors felt that the "lack of acknowledgement" and the "invisibility of women at Ground Zero" by the media was cause for "rising irritation" (p. xii) for the lack of historical value regarding the role's women played during the attacks (Hagen & Carouba). See Appendix A for a timeline of women's integration in the military. Since 9/11, the population of veterans stood at 22 million with 1.8 million or 8% being women who are veterans (Patten). Table 2 refers to the demographic characteristics of the NYSMF's population totaling 30 men who formed the population basis for this study. As the table shows, the population consisted of 11 members of the upper ranks, 13 from the middle ranks, and six from the lowest ranks.

Table 2

Demographic Characteristics of the Study's Military Population

Rank	Number	Gender
General officers	4	Male
Colonel and lieutenant colonel	7	Male
Major, captain, and lieutenant	10	Male
Command sergeant major and first sergeant	3	Male
Sergeant, specialist, and corporal	6	Male

The NYSMF personnel comprising the population for this study consisted of 30 Army and Air National Guardsmen, New York State Naval Militia, and NY State Guardsmen. It is important to note that there were numerous volunteers from all the service branches including civilians. Some service members received direct orders, and others were

volunteers who flowed in and out of GZ from September 17 to October 17, 2001 (Fanning & Goldenberg, 2001).

Audience. The audience for this study ranged from political and government leaders to the individual members of the emergency management response, state military force leadership to include rank and file members of the previously mentioned entities. Also, from the Sea Services to include the Navy, Marine, and Coast Guard reservists, to the governors, State Adjutant Generals (TAG's), state and federal legislators, militia historians, senior officers of the naval services, and those in the National Guard and federal and state agencies with missions in disaster mitigation. This study presents and supports a rapid response, cost-effective, and trained forces properly equipped. NYSMF required training, issued personal protection equipment (PPE) and supported with enough critical incident teams. Decision-makers engaged in future DRP also benefit from the study. Senior emergency managers can now learn from the past DRP's successes and failures from the 9/11 terrorist attacks on the WTC.

Deficiencies in the evidence. The reporting of information on the progress made by the FDNY and the NYPD were presented a minimum of three times a day within the Mayor's information and public affairs briefs (Powell, 2007). There was a plethora of writings espousing how well prepared the NYC agencies performed (Powell, 2007; Rashbaum, 2007). This study addressed the deficiencies in the evidence relating to the NYSMF DRP on 9/11 and the subsequent days referred to as the present within the life existential framework. The NYSMF were assigned perimeter security by OEM, and that was based on NYSMF lack of equipment and training in urban debris (R. Rotanz, personal communication, January 17, 2019). Simon and Tepeman (2001) that the OEM

were forced to rely on heroic actions of professionals and individuals because the emergency plans were insufficient for the 9/11 type attack and were found to be inadequate in response.

An exception to the deficiency were few articles extolling the heroic role of the NYSMF that indicated all decisions and tasks were performed with exceptional professionalism (Fanning & Goldenberg, 2001). This study required comprehensive inquiry into the historical and existential data to help provide best practices for DRP should another disaster of mammoth proportions arise in the future. Candor and objectivity was necessary to overcome the deficiency and lack of evidence in the literature. The literature is scant on appropriate NYSMF DRP for large scale disaster such as the 9/11 WTC attacks. Acknowledging the enormous amount of political praise and media coverage for both the NYPD and FDNY for their outstanding efforts, the NYSMF received very little recognition except for their public affairs office feeds (Fanning & Goldenberg, 2001). It is, therefore, necessary to research and mine the literature to review and reveal specifics of these attacks to discuss the lessons learned from the past and present, and to determine best practices in DRP for future operations in the VUCA environment.

A plethora of 9/11 reports addressed in the literature are on the sacrificial role of the FDNY, EMT, NYPD, and the PAPD. There was little coverage on the role of the NYSMF ground operations, although there was adequate reporting of the role the Air National Guard contributions. No one can dispute heroic role of the FDNY, EMT, NYPD, PAPD, and doctors, nurses and other medical teams as well as countless volunteers on 9/11. The FDNY lost 343 lives on 9/11 running into danger to save the

lives of others from danger. Moynihan and Tracey (2019) chronicled half of the 15,000 firefighters who responded to the WTC attacks on 9/11 who are still affected with debilitating diseases persistent to the present time (2019/2020). The literature, however, is sparse with accounts of the NYSMF ground troops' contribution to the 9/11 disaster (Moynihan & Tracy, 2019; The 9/11 Commission Report, 2004).

Definition of Terms and Variables

Aid to Civil Authority. Refers to federal and state governments being allowed to support local communities with military equipment and personnel based on the request by the local government (Brughardt, 2008).

Air National Guard. Refers to the entity that is the NY State Air Militia and is the component of the National Guard Bureau that supports the United States Air Force (National Guard Bureau, 2014).

Army national guard. The State Army Militia and is the army component of the National Guard Bureau. The Army National Guard may also be placed on federal orders to support US Army Missions or local state communities as directed by the TAG and or the National Guard Bureau (National Guard Bureau, 2014).

Bravo Zulu. A naval signal in the form of a flag hoist or a declaration for a job well done especially after mission accomplishment. The term was adopted in 1949 following the NATO – North Atlantic Treaty Organization formation (Naval History and Heritage Command, 2017).

Chain of command. An official hierarchy in the military that determines what individual or organization in charge and designates subordinate units (Johnson, 2018).

Command and control. A military term that represents authority, direction and communication from a senior to subordinate organizations to accomplish a mission or task. The ability to know what needs to be done and effectively performs the task (U. S. Marine Corps, 1996)

Community. The local municipality, county, state and/or national entity that has governing jurisdiction. The community may also be referred to as part of a collective jurisdiction like that of the United States (McQueen, McLellan, Metzger, Kegele, Strauss, Scotti, Blanchard, & Trotter, 2001).

Consolidated Edison (Con Ed). The utility company was covering energy needs for parts of New York City and Westchester County. One of the largest energy companies in the New York State that earns revenue (Con Ed, 2019).

Content analysis. A qualitative research design used either as a primary or a secondary analysis performed on existing or occurring information in the form of media, film, and tape recordings (Neuendorf, 2017).

Critical Incident Stress (CIS). An incident or tragedy that produces massive stress that may overwhelm the individual's ability to cope. This type of stress manifests as Posttraumatic Stress Disorder – PTSD (CDC, 2002).

Dasein. A philosophy put forward by Heidegger (1957) as cited in Wheeler (2011). Dasein describes four dimensions in which human beings exist: Umwelt, mitwelt, eigenwelt, and uberwelt. Umwelt is the physical dimension, mitwelt is the social dimension, eigenwelt is the psychological dimension, and finally, uberwelt, is the spiritual dimension that was added later by Van Deurzen (1998).

Disaster response preparedness (DRP). The ability of governments and/ or non-government organizations to respond rapidly and effectively to a disaster (Katoch, 2006).

Division of Military and Naval Affairs (DMNA). Is the headquarters for the Adjutant General (TAG) and his administration? TAG holds the equivalency of a commissioner rank in the governor's organization (Cuomo, 2014).

Dual Status Command. During 9/11 The U. S. Armed Forces and the State entities like the NYSMF, had two separate chain of commands with no ability to unify and or coordinate during disasters. In 2004, the Dual Status Command was developed that permitted a Task Force Commander from the National Guard, to be the commander of both Title 10 federal and Title 32 state military forces in one unified command to aid civil authority (Schumacher, 2011; Schwabel, 2007).

Force-multiplier. The concept of Navy, Marine Corps, and Coast Guard Reserves working together to enhance the manpower and capabilities of the National Guard and significantly and effectively improve the outcome of missions or tasks at the local, state, regional or national level (Fanning & Goldstein, 2001).

Ground Zero. The 16-acre area where the Trade Center towers collapsed in New York City following the terrorists' attacks on September 11, 2001 (Crane et al., 2014).

Man-made disasters. Disasters that are caused by human error or act of terrorism (FEMA, 2018).

Natural disasters. Are caused by elements other than a man such as; hurricanes, tornadoes, blizzards, floods, earthquakes, and volcanoes (FEMA, 2018).

New York State Guard. A state force that is not federally recognized. Its' primary mission is to occupy and preserve National Guard Armories if deployed

overseas. They are deployed on state missions by the Governor for defined and specific tasks (DMNA, 2017).

New York State Naval Militia. A state Naval Force consisting of volunteers from the Navy, Marine Corps, and Coast Guard reserves that support the TAG in state disasters under the Consolidate Laws of New York State/MIL, 2019). When the reserve units are federalized, they come under Title 10 of the U. S. C. (McKnight, 2007).

Maritime domain operations. All maritime activities conducted underwater, on the surface, in the air, in Cyber and or in space (U. S. Navy, 2007).

Militia. A federally and state recognize group of citizen soldiers Army and Air National Guard members that serve the State based on Title 32. The NYNM and NY State Guard are defined and authorized by the Consolidated Laws of NY State (2019). Members of the militia that are also members of the armed force reserves maybe federalized if their respective reserve units are placed on active duty under Title 10 of the Constitution of the United States (U.S C. Title 10, 1956).

Oral history. Refers to recording interviews, stories, or other media from historical events for a specific event or organization and for purposes of this study for the NYSMF (Lance, 1983).

Pentagon. A term referring to the leadership of the department of defense resident in a five-winged building located in Arlington, VA. The Pentagon was also attacked on 9/11 (McLaughlin, 2018).

Posse Comitatus. Prevents the federal government from conducting law enforcement activities domestically unless there is a declaration of martial law by the President of the United States (Trebilcock, 2000; 18 U.S.C. § 1385).

Posttraumatic Stress Disorder (PTSD). A psychiatric condition caused by stress due to trauma commonly brought on by conditions at a rescue, recovery operation or armed conflict (Crane et al., 2014).

Sea Services. Often referred to the combination of the US Navy, Marine Corps and Coast Guard armed forces (DOD, 2018).

September 11, 2001, or 9/11. The date in which the Terrorists attacked NY City, Pennsylvania and Washington D. C. (Crane et al., 2014).

TAG. The Adjutant General of the State is the senior military commander in the state and reports to the governor. TAG is responsible for the command, control, and leadership of all militia forces assigned to the State (National Guard, 2007, para. 1).

Title 10: United States Code (U.S.C.)**.** This code regulates the Department of Defense and the federalized armed forces in their organization, personnel, military power in the continental U. S. in operations overseas (10. U.S.C., 1956).

Title 14 USC. This code regulates the Coast Guard, Coast Guard Reserve, and Auxiliary forces as part of the Armed Forces and is also incorporated and reports to Department of Homeland Security - DHS (14. U.S.C., 1947).

Title 32 USC. This code regulates the Army and Air National Guard and the Organized Militia to the organization, personnel, military power, and operations within their state-sponsored program in support of the Civil Authority (32. U.S.C., 1956).

Toxic environment. Refers to the Ground Zero site at WTC during 9/11 during the rescue and recovery period. There were 1.2 million tons of pulverized concrete and toxic and combustible substances permeating the air. (CDC, 2002).

Volatility, Uncertainty, Complexity, and Ambiguity (VUCA). A military acronym and term describing the ferocity of disasters both natural and man-made in both magnitude and parameters describe domestic and international events and circumstances that provide a framework from which to plan, to deter, mitigate, and recover (Kraaijenbrink, 2018). The characteristics of VUCA points to challenges that are unexpected (volatility), has lasting effects of unknown origin (uncertainty), volume and nature of the events are of overwhelming proportions (complexity), and lacks precedence that one might not be prepared to handle (ambiguity) (Bennett & Lemoine, 2014).

World Trade Center (WTC). Pre9/11, the WTC was a thriving financial district comprising seven buildings and housing the Office of Emergency Management. The main towers were destroyed in the 9/11 attacks.

Purpose of the Study

The purpose of the study was to explore, retrospectively, the phenomenon of Disaster Response Preparedness (DRP) by four survivors of the 1993 WTC bombing, seven NYSMF during the September 11, 2001 (9/11) terrorist attacks at the WTC, and five EMS professionals under the life existential framework of past, present, and future. A secondary purpose of this study was to explore the CIS/PTSD and the physical health impact on the NYSMF serving at the WTC site during 9/11.

Chapter 2: Literature Review

Overview of the Study

The phenomenon of Disaster Response Preparedness (DRP), by the NYSMF to the 9/11 terrorist attacks at the WTC is the problem being explored in this study. It is important in understanding the lack of adequate response to the disaster initially and the reasons behind this failing. However, during the first week of the attacks, the NYSMF eventually were consolidated and organized by adding value along with the other DRP teams (FDNY, NYPD, and volunteers) to the security and disaster relief at Ground Zero (Fanning & Goldenberg, 2001). A measured and coordinated DRP was shaping up with more effective and efficient mitigation by the NYSMF. It is also as essential to study and understand the critical incident stress and the physical health impact on the NYSMF during the WTC Terrorist attacks at GZ (Bennett & Lemoine, 2014).

This study was framed in the context of Van Manen's life existential by reflecting on the lived past, the experiencing the present of the 9/11 attacks on the WTC, and the anticipating and imagining an improved terrorist-free future (Van Manen, 2016). Stevens (n.d.) writing on the works of Viktor Emil Frankl (1946) and citing L. Seligman and Reichenberg (2014) and Van Deurzen offered four ways in which human beings exist in the world using a process called dasein. To understand human beings, one must first understand why human beings exist. Dasein, according to Heidegger's definition as cited by Wheeler (2011), is a label ascribed to individuals as a "mode of being" or a "way of life" and not from the perspective of the biological person (para. 13). There are four dimensions to dasein (Seligman & Reichenberg, 2014; Van Deurzen, 1998, 2005, 2006): Umwelt, mitwelt, eigenwelt, and uberwelt. Umwelt is the physical dimension where

people hone a relationship to the natural environment and embodies material things and possession in the world which they live. Mitwelt is the social dimension where people hone relationships and interactions with others based on cultural norms and social conventions on elements like race, gender, and religion. Eigenwelt is the psychological dimension that represents the relationship the individual has with him or herself in their mind space encompassing elements such as thoughts, feelings, and desires and finally, uberwelt, which is the spiritual dimension that governs the metaphysical world and the principles that rules individuals such as beliefs, ideals, and values. It is important to note that this dimension was added later by Van Deurzen (1998).

Van Deurzen (1998) expanded on the fourth dimensions as stemming from the works of Heidegger (1957), Binswanger (1946,1963), and others. Human beings face many inconsistent options in life with many being opposites of each other. In the first dimension or field forces, human being struggle between survival and death in their environment/the natural world. In the second dimension, the struggle surrounds belongingness versus isolation in their relationship with others when dealing with race, gender, religion, and other issues. The third dimension concerns the struggle between integration and disintegration in their personal thoughts, feelings, and desires. The final dimension sees human beings struggling with between the threat of meaningfulness and the meaningless in a metaphysical world (Stevens, n.d.; Van Deurzen, 1998). Van Deurzen (1998 also stated that "on each of these dimensions, we have to learn to stand in the tension between opposites, discover that we cannot have life without death, love without hate, an identity without confusion, and wisdom without doubt" (p.13). In concluding this section, Van Deurzen (2006) added that in lived life, humans would

constantly face conflicts and overcome them, only to be confronted by new challenges again and again.

The research required a reflective understanding of all the existential experiences of the informants who were survivors from the first or *past* phase – the bombing of the WTC in 1993 and what changes were made to DRP for the 9/11 responders to draw on. The second or *present* phase begins with the 9/11 (2001) terrorist attacks on the WTC including insights and meaning of the lived experiences of the NYSMF who were under military orders to respond to this new disaster and draw from what they learned from the 1993 attack of the past to participate in the rescue and recovery. The third or *future* phase provides again, lessons learned and DRP improvements implemented after the 9/11 attacks at the WTC as well as informants' perspectives on the future of DRP. This phase also delved into the major health concerns that surfaced post9/11 attacks.

The literature review began with the conceptual framework and cover a discussion on the lived past on WTC attack in 1993, the experienced present (for this study) on 9/11 WTC attacks and on the future, which is based on lessons learned since the attacks and draws heavily on the Report by the National Commission on Terrorist Attacks upon the United States (The 9/11 Commission Report, 2004). Its members consisted of an independent and bipartisan body for the purposes of revisiting, accounting, and analyzing the DRP from all angles as well as recommending improved DRP techniques against future similar contingencies. The RAND Organization (2018) stated that the "evolution of terrorism and its effect on the direction of U. S. national security, specifically since 9/11, when terrorism was framed as an "existential threat" (para. 4). Jenkins added that in the past, prior to 9/11 threats of such magnitude on U. S.

soil were real but that since 9/11 threats have been transformed into an imagined state. The chapter closes with a synthesis of the literature review, the methodological approaches considered for this study, and the research questions that are framed around the reflecting on the lived past, the experienced present, and the anticipated and imagined future.

Conceptual Framework

The literature is replete with motivational, humanistic, behavioral, and psychological theories and mental models that applies to this study and relates to the individuals/NYSMF, the units/groups, and the system/organization involved (Austin, 2009; Bandura, 1986,1994; Engel, 2018; Jones, 2004; Jung 1921; Lamonte, 2018; Ledesma, 2014; Maslow, 1943; McCauley, 2008; Mousza, 2018; Myers, 2016; Reich, 1998; Robinson, 2016; Smitta-Moalosi, 2013; Warrant, 2018; Vygotsky, 1978). According to Mouza (2018), theories lack a singular meaning and can be said to be a set of principles or constructs that seek to help in the understanding of phenomena and to evoke meaning in a methodological way. Theories contain core elements of research question(s) gleaned from the literature in determining the who, what, why where, how, and when of the issues being studies (Mousza, 2018). The 5W's and one H is used in theory formulation to help researchers extract information from interviews and form research questions. Johnson and Christensen (2014) stated that education researchers often study phenomenon that are internal to the individual (beliefs, values, and attitudes) and external to the individual (cultures, events, environmental issues). Within these two spheres, researchers' study three types of factors: psychological factors that focuses on the individual concerns, social psychological factors that relates to a group of individuals

such as team, and sociological factors that places emphasis on the intergroup/systems level affecting the socio-culture, socio-economic, and socio-political environments. The conceptual framework is divided into three levels: The individual (the 1993 WTC bombing survivors, NYSMF, and the attackers), the group/teams (the 1993 WTC bombing survivors as a group, NYSMF units involved in 9/11, and EMTs in general), and the system/organization (the armed forces organization as a whole and first responders).

The individual. This section covers theories and models relating to survivors/victims, the members of the NYSMF, the terrorists, and EMTs connected to this study. The approaches include Jung's Typological Theory, Bandura's Social Cognitive Theory, Maslow's Hierarchy of Needs Theory, and Vygotsky's Most Knowledgeable Other (MKO) Theory.

***Jungian typological theory*.** Rational thinking interprets perceptions and, as feelings, is the opposite of irrational function that provides the individual with an ability to decide to struggle with a situation/problem or leave the situation or problem (Jung, 1921). Jung also believed that sensation is the irrational and inferior psychic energy of the subconscious and is the opposite of intuition. Another irrational function that at times provide the individual with a superior conviction is based on belief. Warrant (2019) argued for social justice and believes individuals must transgress dominant social norms that are archaic and require breaking apart these norms with new educational experiential. Myers (2016) was more closely aligned with Jung's typological theory but placed emphasis on individualism. Type identity is a function of the Myers-Briggs Individual Type Indicator (MBITI) and looks to place an individual in a group type whereas Jung

wanted the individual to become aware of self and grow rather than be typed (Myers, 2016).

Jung (1921) introduced four psychological functions associated with human existence that can be interpreted along the realms of rationality and irrationality (in terms of the attackers) and developed four functions converged into two pairs of opposites. There are the two *judging* (or, rational) functions of thinking and feeling and two *perceiving* (or, nonrational) functions of sensation and intuition (Austin, 2009; Daniels, 2019; Jones, 2004). Daniels (2019) provided an explanation of the four functions. Thinking is a rational, judging function based on "truth or falsity" (para. 10). Here the individual employs intellect to develop a concept and draws on analysis to understand the reality of the situation. Feelings, like thinking, is also a rational, judging function that is based on "affective, sentimental" (Para. 7) understandings where the individual determines situation such as likes and dislikes and good and bad feelings. Sensation is an irrational and perceiving function where the individual sees objects as they are presented without any assessment of the experience and does not attempt to organize them into "context, implications, meanings" (para. 8). Individuals are on focus on facts and details. Finally, intuition, like sensation, is also irrational and perceiving but in a sense, it is the opposite of sensation in that the individual discards facts and details and instead focus their attention on "the general context of the experience" (para. 9). Reality is ignored in favor of imagination and meanings that are "not immediately apparent" (para. 9).

Reich (1998) discussed the concept of moral disengagement of terrorists and various states of mind they inhibit in respect to psychologies, ideologies, theologies and states of mind. The discussion focused on the suicide bombings, martyrdom, and

hijackings carried out by Hizballah, a Shi'a Islamic political party based in Lebanon and formed in the mid1980s. McCauley (2008) tapped into irrational personalities in the form of the 9/11 attackers: four groups of Arab Muslim hijackers, a total of 19 persons, who commandeered four planes with the intention of torpedoing them into buildings and killing innocent lives. McCauley (2008) offered several states of mind that may have affected the attackers' judgement. Psychopathy, as defined by the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV), self-sacrifice/selfishness, suicide, and martyrdom were some of the possible diagnoses offered and/or discounted for the attackers' actions. Psychopathology is a disease or a disorder where individuals present an "unrealistic appraisal of the world, including disturbed perceptions of self and others" (McCauley, 2008, p. 275). Stemming from psychopathology is sociopathology or sociopaths who are devoid of guilt or shame thus making them reject normal social attachments and instead feel to need to manipulate others for their own needs and wants including taking innocent lives without remorse (McCauley, 2008). McCauley ruled out self-sacrifice/selfishness as possible root cause of the attackers' motives because of the detailed methods and coordination – "the group cohesion and trust" (p. 275) used by the attackers to execute their will on 9/11 America.

McCauley questioned whether the attackers were suicidal or not but immediately ruled out this logic because suicidal individuals are "usually associated with depression" (p. 275) and that the attackers appeared normal up to the point of flying the planes into buildings. They lived normally and pursued their pilot licenses indicating that they lived a purposeful life and not one fraught with depression. Finally, according to McCauley, martyrdom, is derived from the spiritual belief. The attackers relied on a prayer manual

that dwells on martyrs and martyrdom in the Muslin traditions of paradise in from three perspectives. The first perspective is living socially in a "God-pleasing life" in paradise "with prophets, saints, and martyrs" (p. 279). The second perspective is stems from a physical paradise where "heavenly brides await" (p. 279), and the third perspective is the meeting one's savior in the "highest paradise" (p. 279). Having honed these three perspectives, the martyrs/attackers will avoid punishment, will be "purified of his sins, and enters paradise a clean and purified man" (p. 279). In concluding his arguments, McCauley stated that in such cases,

> The contract advanced in the manual is this: a man who gives his life in the path of Allah is a martyr who trades the paid and disappointment of human existence for release from sin and glory in heaven. Considered strictly as a contract, this is an attractive proposition. Life can be more difficult that death; …Death in the flash of impact and explosion can be easier than withstanding torture in an enemy's prison and easier that watching loved ones suffering pain, shame, or disease. (p. 279)

McCauley opined that the manual not only promised individualism but also group cohesiveness in the form of "solidarity and unity among the attackers" (p. 279) and an establish leader or leaders and that followers should "listen and obey" (p. 279) as one prays, talks, supports, cares for each other. The manual, according to McCauley, suggested that the attackers share food and drinks (as a ritual rather or defense mechanism) to distract themselves from fear rather than as sustenance, check supplies and equipment, and offer mutual encouragement to each other. Austin (2009) asserted that Jung's later works allude to "'unraveling', 'de-centering', centrifugal experiences of

otherness in the psyche" (Abst.). Here individuals who display a dissociable psyche tap into their "fantasies, terror and longings about coming undone and bringing others undone" (Abst.).

Bandura's social cognitive theory (SCT). The SCT evolved from social learning theory (SLT) in 1986 with the advent of the self-efficacy element (LaMorte, 2018). LaMorte (2018) discussed the six behavioral constructs that influences the individual and leads to change. The behaviors are reciprocal determinisms, behavioral capability, observational learning, reinforcements, expectations, and self-efficacy. Rakeover (2017) spoke to the evolution of psychology focusing less on the consciousness and more on behaviors in both classical and operant conditioning. Bandura (1986) believed that the individual, the environment, and reciprocal behaviors are a significant part of the SCT. Individuals have the capabilities to perform learned behaviors by demonstrating learned knowledge, skills, and abilities (KSA) (LaMorte, 2018). Such behaviors are reinforced by others and expected subsequent rewards for such behaviors. Expectations refer to values placed on the behaviors or the consequences that will develop into personal desired positive or negative characteristics. Self-efficacy refers to the level of confidence and determination expended by the individual to perform the behavior and overcome any difficulties that may arise (LaMorte, 2018).

Maslow's hierarchy of needs theory. Motivation to work and achieve success is a major factor in individual success in organizational behavior and job satisfaction as well as high performance and productivity (Engel, 2018; Kaur, 2013; Maslow, 1943). Kaur (2013) added that if individuals' needs are not met in an organization setting, "will be unlikely to function as healthy individuals or well-adjusted individuals" (p. 1061).

Maslow (1943) identified five tiers of an individual's psychological needs in the form of a pyramid starting from basic to higher order needs. The first level of the pyramid (at the bottom) are the physiological needs: Food, water, work, shelter, and sex (Engel, 2018; Kaur, 2013; Maslow, 1943). It is incumbent on organizations to remunerate employees at a satisfactory level as a hungry, homeless, and unfulfilled employee will be deficient or derelict in their duties (Kaur, 2013). The second level from the bottom are the safety and security needs: Family, home, health, money, education, and job (Engel, 2018; Kaur, 2013; Maslow, 1943). Kaur remarked that employees should be able to work in an "environment that is free of harm" and to execute their duties without trepidation and detriment (p. 1062). Hammons (2017) added that the working in the military is a "dangerous, life-threatening situation, with long deployments away from family" (Para. 4). The third level up are the belonging needs: Love, friendship, and intimacy where employees enjoy the fun part of organizational life (Engel, 2018; Kaur, 2013; Maslow, 1943).

The penultimate need, second level from the top, are the self-esteem needs: Achievement, confidence, independence, and self-respect where organization "encourage employees to participant in social events…to recognize distinguished achievements" (Kaur, 2013, p. 1062) such as honors and awards (Engel, 2018; Maslow, 1943). The top level is referred by Maslow as the growth level where self-actualization needs reside: Acceptance, demonstration of moral fiber, creativity, and problem-solving (Engel, 2018; Kaur, 2013; Lawler, 1973; Maslow, 1943). At the pinnacle of the triangle, employees "represent valuable assets to the organization human resource" (Kaur, 2013, p. 1062). Conger and Benjamin (2006) writing on the developing the individual leader in

organizations, added that the military trains its members in various forms of leadership skills for successive levels despite their rank and span of control. Kaur concluded that Maslow's goal was to demonstrate how organizations can maximize employee potential in creative ways by helping the to become self-actualized. Strategies to accomplish this feat includes promoting a healthy workforce, providing opportunities to socialize, offering economic benefits for contributing to society and financial security for the self and family, and recognizing employee accomplishments.

Vygotsky's theory of the most knowledgeable other (MKO). The MKO theory posits that an adult/a superior, a tutor/guide, a peer/colleague, or an entity with higher-order skillsets (can even be mechanical or electronic such as computer technology) serves as a conduit for learning (Vygotsky, 1978; Robinson, 2016; Smitta-Moalosi, 2013). Many employers and the military employ the services of the MKO in the form of a drill sergeants, senior-ranked officer, or consultants to support adult learning. Whereas pedagogy is the method of teaching children to learn, andragogy is the method of adult learning in the classroom or in a work setting.

Group level (military forces unit). This section covers theories and models relating to the group (the military forces unit). The theories and models covered are group dynamics, positive psychology, and appreciative inquiry.

Group dynamics. Lewin's group dynamics theory claimed that when in isolation, an individual can be forced by group dynamics to conform to group norms, roles, interactions, and socialization processes. As a result, change is affected at the group level and may create "disequilibrium" (Burnes, 2006, p. 136). Burnes (2006) concluded that understanding the internal dynamics of a group is not enough by itself to bring about

change, but that the need to provide a process whereby members engaged in and feel free to commit to changing their behaviors (Burns, 2006).

Katzenbach and Smith (1992) defined teams as small units of individuals with corresponding skills who are committed to a common purpose, performance goals, and approach to work for which they hold themselves accountable. Teams are also the foundational building blocks of the military through units and hierarchical structures (Goodwin, Blacksmith, & Coats, 2018). The goal is to maintain humanistic characteristics and function effectively to address present and future challenges. By studying military teams and their training efforts over 60 years, Goodwin et al. (2018) provides insights into the various innovative programs developed and tested and citing several military failures since the Vietnam war when the military changed it recruitment structure from conscription to an all-volunteer format that was smaller and leaner, a reliance on teamwork was essential to achieving "synchronized effectiveness" (Goodwin et al., p. 324) in multiple teams. With the advent of the 9/11 attacks, the military realized that "a sense of urgency" was needed to battle in "unconventional, dynamic, and unpredictable environments" (Goodwin et al., p. 324). Additionally, cybercrime and other technological forces have impacted the way the military functions (Goodwin et al., 2018).

The military, with its focus on the science of teams, have made significant contributions to five specific areas in team dynamics:

Team effectiveness and performance. Due to the tactical and strategic nature of the military, effective and high-performance teams are crucial to their success (Goodwin et al., 2018). After suffering individual, team, and system failures from fighting in "unconventional, dynamic, and unpredictable environments" and encountering events

such as friendly fires and the surprise attack on 9/11 that "hampered overall mission effectiveness" (Goodwin et al, p. 324). As a consequence, the military developed several team-effectiveness models over the decades, geared towards its various branches (U. S. Army, Navy, Marine Corps, Air Force, Coast Guard, the impending space force, and the reserve/civilian arm) under the concept of a multiteam system (MTS) approach (Goodwin et al., 2018; Military.com, 2019). With its focus on a "synchronized effectiveness" (Goodwin et al, p. 324), the military conducted research, studied theories such as social network theory, launched models into practices for improved team performances. Some of these models and processes include the input-process-out model (IPO), robotic and artificial intelligence (AI), TARGETs (targeted acceptable responses to generated events and tasks), wearable sensors, advanced algorithms, and trace data analysis (Goodwin et al, 2018).

Team processes and emergent states. As a "dynamic…and difficult phenomena to accurately measure in real-world teams" (Goodwin et al., p. 326), the military has engaged in high fidelity synthetic worlds of simulations and a taxonomy of team behaviors to define and understand actions within episodes and transition between episodes. From the emergent states perspective, the military is trying to accomplish team goals through three different states: (a) motivation or collective efficacy (b) affective or cohesion building to enhance trust and coordination as well as reducing stress/sicknesses, overcoming adversity and other challenges, and increasing satisfaction and hence retention; and (c) cognitive or shared mental model stemming from the mental model theory (Goodwin et al., 2018). By engaging in the latter, the military's intention is to

build not only shared cognition, but other forms such as “team situational awareness, transactive memory, and consensus” (Goodwin et al., p. 326).

Team leadership. The military focuses on leadership decision-making or command teams versus followers/staff in functional teams in the form of commissioned officers versus enlisted members, or drill sergeant versus infantry men and women (Goodwin et al., 2018). The role of the command team is to lead, direct and coordinate the activities of the lower-level teams at the infantry battalion and air squadron level. With changes in leadership development, the military is now adopting shared forms of leadership that consists of “guiding and directing, multiple team as collective to achieve superordinate goals and effectiveness” especially when “performing nonroutine, dynamic tasks that are highly independent” to maximize synergy (Goodwin et al, p. 327). Synergy is of high importance in team activities. Synergy occurs when the weakness of one team member is compensated by the strength of another team member and is therefore greater than the sum of all the individual performances (Katzenbach & Smith, 1992).

Team staffing and composition. Team members possess unique multilevel of KSAOCs) – knowledge, skills, abilities, and other characteristics that enables them to increase performance and develop as a “holistic team” (Goodwin et al., p. 327). Goodwin et al. cautioned that in developing and composing a team, consideration should be given to not only linear skill sets and combing member attributes but also the type of staffing decision involved such as building a new team from scratch, replacing members of an existing team, or staffing multiple teams.

Team training. Goodwin et al. (2018) revealed that an assessment of training in the military discovered gaps in the ways that team training methods resulting in revisions

to some existing training techniques and prototypes such as CRM – crew resource management in aviation, TDT – team dimensional training in the navy on teamwork behaviors, task work and technology in the air force, and team adaptability in the army. Synthetic battlespaces afforded by simulator networking for SIMNET has been a highly effective team training method for several branches of the military mainly because it allows for geographically dispersed teams to train from different locations as a unit. As Goodwin et al. emphasized, a team can be more effective than the sum of its members.

Cultural dimension theory. Organizational values are influenced by culture that influences cross-cultural communication and behaviors in the workplace/unit through group roles, norms, attitudes/behaviors, and perceptions as well as values engrained in society (Cleverism, 2015; Hofstede, n.d.; Hofstede 1983, 1984, 2012; Mind Tools, n.d.a). Hofstede conducted a study across 50 nations where IBM employees were located between 1967 and 1973 and identified four distinguishing cultural dimensions in the form of dichotomies in the original study: Individualism versus collectivism (IDV), high versus low uncertainty avoidance (UAI), masculinity versus femininity (MAS), and near versus far power distance (PDI) (Mind Tools, n.d.). Subsequently, two additional dimensions, based on a different study, were added: long versus short-term orientation (LTO formerly pragmatic versus normative – PRA) and high versus low indulgence versus restraint (IVR).

Hofstede (n.d.) discussed the six dimensions (6-D) model. IDV dimension describes the extent to which organizational members feel free in expressing themselves independently (high on individualism) as opposed to leaning towards interdependence by waiting for a consensus to speak in a collective voice (high collectivism). UAI describes

how well organizational members cope with anxiety to rock the boat or upset the apple cart (low avoidance) as opposed to maintaining the status quo (high avoidance). MAS describes the different societal roles distributed between men and women. In masculine societies, men are more assertive and in feminine societies women more submissive. PDI describes the degree to which inequality is accepted in society. High PDI indicates a propensity for hierarchical distribution of power at the top and in low PDI nations, power is more equally disbursed. LTO is a temporal dimension and describes the time horizon to accomplish goals. In short-term societies, decisions are swift and in long-term societies the time orientation is longer. Finally, IVR describes a society's culture that is high on indulgence where individuals' express openness, enjoy life, and have fun as opposed to societies that are high on restraint where individuals suppress gratification and behavior is more regulated due to stricter social norms (Hofstede, n.d.). Applications of Hofstede's (1983) cultural dimension relate to the different ways to structure organizations, ways to motivate employees, and ways that societal issues are handled by employees and organizations.

Seligman's positive psychology. Seligman's brand of psychology tapped into the positive side of psychology. Instead of attempting to repair damage by exploring the past, one should live the present and expect positive future life experiences (Positive Psychology Program, 2017; Robinson, 2016; Seligman, 1975, 1991; Seligman & Csikszentmihalyi, 2000; Slavin, Schindler, Chibnall, Fendell, & Snoss, 2012). According to Robinson (2016), learned optimism is the opposite of learned helplessness. In learned helplessness, an individual adopts three types of attributions: internal (blames self), stable (continues self-blame pattern), and global (blames others permanently). The new positive

psychology emphasizes well-being using the following five constructs called PERMA - Positiveness, Engagement, Relationships, Meaning, and Achievements (Positive Psychology Program, 2017; Snyder et al, 1997). Positive emotion expounds on the values of promoting self-perseverance, battling through life's challenges, and developing a solutions-based approach to life. Engagement challenges individuals to tap into their emotional intelligence to pull out opportunities and activities that will out well-being and positive outcomes in one's past, present, and future life. Relationships that will foster a social construct with a lasting bond and that will lend to support system when crises looms are to be pursued. One should avoid isolation at all cost and aim for inclusiveness. Meaning is a crucial aspect of PERMA and includes developing a meaningful purpose in life and contribute to society, pursuing volunteerism and activism are areas to consider participating in. Setting goals that will deliver satisfaction for a job well done with pride is another tenet to follow and obtaining achievements and rewards will follow but require that one to seeks ambitious projects that will deliver a sense of accomplishments (Positive Psychology Program, 2017).

Appreciative inquiry (AI). AI is a paradigm shift using a 4-D cycle of discovery, dream, design, and destiny methodology that organization members use to leverage their core strengths to attain more meaningful and sustainable goals aligned with their desired future perspectives (Cooperrider, 2012). Zhao and Anand (2013) writing on what is termed the 'Collective Bridge' added that "collective knowledge, which is the knowledge embedded among individuals regarding how to coordinate, share, distribute and recombine individual knowledge, is a key element of …competitive advantage" (p. 1513).

AI has a positive core that allows it to pursue a sustainable organizational development full of potential and promise (Cooperrider, 2012; Burke, 2006). Cooperrider stated that the inquiry begins with appreciating the best that the organization has to offer in the discovery phase. In the discovery phase, the organization draws energy and sustenance from its positive core. Here, organizational members/unit focus attention on the best that the organization has to offer and bypass the negative past or present. Once the organization members devote time and effort to discover its positive core, the members begin envisioning the future in the dream phase. Methodologies that will tap into the best future are explored and the ones that will allow the organization to reach its pinnacle are selected. Once the dream is decided on, the members move into the design phase. In constructing in the future, members begin to design images of the ideal future that is grounded in its positive past and develop plans to reach its highest potential. In the destiny phase, organizational members integrate the three prior phases into an appreciative learning culture and deliver a future of "shared ideals" filled with momentum and potential for innovation (Para. 10). At this final stage, additional stakeholders are brought into the picture to seek commitment for supporting, contributing, realizing, and sustaining and nurturing the arrived at destiny (Cooperrider, 2012).

Systems level (organization). Theories and models relating to systems or the organization covered in the literature included: organizational development (OD) including planned change versus improvisation and organizational chaos, systems theory, x-efficiency, and the theory of world security. Pascale et al (2000) study on the U. S. Army speaks to the political and directed challenges the Army contends with daily, but

through its self-organization and emergence, the army continues to re-invent itself and adapt effectively to the fluid changes. The Northern Training Center in the Mojave Desert is the training center for integrating all types of combined arms to include mechanized assets (Pascale et al). The army found that central control of a Brigade can be debilitating through constant review of units. After Action reports and the rehearsal of drills afforded the army a better option to streamline the decision-making process. The army also decided to allow the lowest organic level individual decision-making rights on the battlefield if the actions were in keeping with the commander's intent. In this way, the army ensures that combat decisions are made timely and precisely at the lowest unit level (Pascale et al).

Organizational development **(OD).** OD is an important concept in organizations because it fosters organizational renewal and change, which can be accomplished through long term planning to increase effectiveness of the individuals, groups, and the organization (Mirvis, 2006) striving to tackle and survive turbulence and negative trends. Mirvis stated that there are two types of changes in the OD process: evolutionary and revolutionary. Under the former change is continuous, linear, orderly, sequenced, and incremental. The evolutionary type of change process leads to quantitative renewal, in a known state, and fine-tuning content in the process to create a predictable future. In the case of the latter, change is discontinuous, nonlinear, chaotic, reciprocal, and simultaneous resulting in death, an unknown state, rebirth, and a context that is qualitative in nature to create a new future (Mirvis, 2006).

Historically, the OD movement, from an evolutionary perspective was based in scientific and utilitarian philosophies, its knowledge from a cumulative and universalistic

approach, its client base from a logical and pragmatic stance, and its practices and practitioners honed a market-driven and professional style. At the other end of the spectrum, the revolutionary perspective, OD's knowledge was derived from a particularistic slant, its movement from a humanistic and value-based approach, its client base from explorative and experimental leanings, and its practices and practitioners honed a visionary and spiritual worldview.

Mirvis (2006) summarized the two states as transitions (evolutionary) and transformation (revolutionary) and that:

> The notion that revolutionary changes are more profound and have more significant consequences is well established in scientific discourse. In a review of this subject, Smith (1982a), drawing from biology, distinguishes between morphotactic and morphogenetic change. The former involves natural mutations or changes in the appearance of an organism or ecosystem. The latter are changes in the essence or core of the phenomena in question. Core changes in OD's paradigms marked it revolutionary periods. (p. 48)

In the simplest sense, change management means the method of helping a person, a group, or an organization to change how it conducts operations. (Rothwell & Sullivan, 2005). Time has become a considered resource; therefore, the challenge of the future is to encourage people to adapt to change, in real time, and as occurrences unfold. Rothwell and Sullivan (2005) opined that change fails because companies are providing "first aid to terminally ill patients" and "ignoring dead elephants in the room" (p. 16), whereby in the former quote parties are aware of issues but act too late or none at all and in the latter quote parties are aware of issues that plague the organization but are neglecting to tackle

the problems forthwith thus causing failure to occur. The army believes in a single leadership model with leadership principles and leadership traits but recognizes there are levels of abilities throughout the rank structure and certain responsibilities that also must tailor specific training appropriately. Winston, Ferris, and Finkelstein (2017) argued organizational development must start at the top of the organization if it is to be successful.

***Planned change*.** Huy (2001) stated that change can be a planned process or improvised and that a balance of both can be effective in the change process. Timing is also important in the realm of planned change. When planning a change effort, one should be aware of the effects on the individuals, teams, and the organization as well as who is leading the change. Huy introduced four types of leadership styles and the significance of understanding each in determining the intervention model best suited for the intended change: Commanding, engineering, teaching, and socializing.

Commanding style. The commanding style of intervention physical and tangible and best suits a *battle plan* type of engagement such as the military organization. It is a take it or leave it approach to leadership due to the autocratic and caustic nature of the approach (Huy).

Engineering style. Like the commanding style, the engineering style of intervention is also physical and tangible and best suits situations where work process and technology are deemed crucial. It recognizes the human element more so than the commanding style and promotes fast improvements, autonomy, and parochialism of the units. A downside is that is does not endorse organization-wide integration and cooperation (Huy).

Teaching style. Unlike the commanding and engineering styles, the teaching style of intervention is more intangible and focuses on mental acuity, takes more time, effort, and commitment to achieve its goals. Additionally, the teaching style advances the concepts of shared belief in ideas, value, and emotional energy. Leaders who chose this type of intervention are usually skilled in philosophy and psychoanalyzing. The disadvantage of this technique is that it may not create a climate for organization-wide strategic realization nor sustain behavioral change among its members (Huy).

Socializing style. The socializing style of intervention focuses on intangibleness and mental acuity like the teaching style but departs from it in respect to its reach. Socializing attempts to bring the organization under one umbrella to enhance social relationships. The social orientation is much more time consuming than the other styles to lay a foundation and forge quality relationships and facilitate deep value appreciation for the followers to understand. The disadvantage of too much socializing is that it could become splintered as members indulge in experiential learning, fight for scarce resources, narrow the focus of the change, and thus border on inertia (Huy).

Pascale, Millemann, and Gioja (2000) conducted a study on several major companies including the U. S. Army and revealed that companies desiring to be innovative must promote “nimbleness and agility” (p. 13), understand that the organization is a battlefield between the forces of maintaining the status quo or embracing change and transformation, and recognize that the organization, like it leaders and followers, is living and breathing organism in need of life’s sustenance. If the organization remains static and embraces the status quo, it will eventually reach equilibrium and die a natural death (Pascale et al).

Systems theory. Senge (1990) believed organizations can create their own destinies by being open-minded and not allowing individual mindsets or groupthink to stand in the way of moving forward to a common goal. Senge (1990, 2006), Bui and Baruch (2010), and Mirvis (2006), discussed systems theory under the lens of the learning organization as part of OD and its five disciplines to be honed for addressing change and effectiveness: Shared vision, team learning, mental models, and systems thinking. Bui and Baruch (2010) supplemented Senge's five disciplines of the learning organization for both organizations and academia by identifying groups at the individual level (personal mastery), collective level (team learning and mental models), and organizational level as in shared vision and system thinking).

Shared vision. Senge (1990, 2006) stated that in building a shared vision, getting buy-in from everyone's contribution brings synergy to the group, representing it at its best from differing perspectives thus creating synthesis and connectedness to galvanize the organization to achieve its goals.

Personal mastery. By continually clarifying, deepening, and tapping into everyone's personal vision, new skills learned mostly from self-directed learning is developed to increase organizational learning.

Team learning. Senge believed that it is teams that build an organization and not individuals. if the team cannot learn, neither will the organization.

Mental models. Ingrained assumptions and images that influence how individuals work, understand the world, and act represent mental models, which reside in an individual's subconscious thoughts and explains biases and tendencies towards stereotyping.

Systems thinking. The literal fifth dimension; it ties all the other disciplines together as a strategic process of making sense of trends and patterns affecting the organization (Senge).

In applying the Senge's Five Disciplines (SFD) practically, Bui and Baruch (2010) focused the higher educational (HE) setting. The study was designed around a conceptual framework model to determine the uniqueness of the SFD in a learning organization sector before and after the SFD intervention. The findings showed that causal model developed for the study was applicable to help HE organizations gain competitive advantages. For originality, the study added value not only to the academia but also to the business community (Bui & Baruch).

Leibenstein's x-efficiency. According to Robinson (2016), the x-efficiency model, developed by Leibenstein, explains that some companies "suffer from inertia" (p. 56) and fail to fail to maximize efficiency. Such companies operate on the pretext that if it's not broken don't fix it and therefore chose to stay in state of flux with constant outpouring of resource and sticking with the status quo. In these situations, leaders operate in suboptimal environment with questionable decision-making practices that hinders productivity (Leibenstein, 1978; Robinson, 2016; Vanagunas, 1989). By operating within their production possibilities frontier (PPF) instead beyond it, x-efficiency firms fall prey to internal structures rather than factors in the external environment as some organizations tend to blame (Leibenstein, 1978; Robinson, 2016; Vanagunas, 1989).

***Booth's theory of world security*.** Booth (2007), building on his previous critical security theory, developed a theoretical framework with which to "explore and engage

with the security of real people in real places" (p. xii). Booth's theory attempts to address world security issues identified as six areas that threaten humanity and world stability: strategic security dilemmas, population crises, environmental chaos, threats to globalization, and the rise of unreasonableness among political factions and nations as well (Booth, 2007; Clausen, 2015). Cuoco (2010) also offered the revolution in military affairs (RMA) theoretical framework but that level of historical evidence is beyond the scope of this study. The world of Central Security Services (CSS) will need to pursue a process that Booth calls *perlenfischerei or pearl fishing* to select and string together the best of society's collective action pearls in an egalitarian fashion to benefit not only individuals but communities in a global society. Such actions will replace status quo, the state-controlled programs, and worn, tried and not proven strategies with paradigms such as emancipation, security for cosmopolitan societies' "structures and processes within human society, locally and globally, that work towards the reduction of the threats and the risk that determine individual and group lives. The greater the level of security enjoyed, the more individuals and groups…can have an existence beyond the instinctual animal struggle merely to survive. The idea of world security is synonymous with the freedom of individuals and groups compatible with reasonable freedom of others" (Booth, 2007, p. 4-5).

Combined theory on all three levels: Bronfenbrenner's Ecological Systems Theory of Development that covers the individual, group processes (experiences and reactions to the environment), and systems interactions as well as how the historical context of time has influenced the past and the present (Bronfenbrenner, 1979; Bronfenbrenner, 2005; Hoare, 2008; Rosa & Tudge, 2013). Bronfenbrenner developed an

ecological framework based on four concentric circles in which the individual is interconnected from birth to death: The microsystem, the mesosystem, the exosystem, and the macrosystem as well as a chronosystem that is related to time encompassed all the other systems (Bronfenbrenner, 1979; Bronfenbrenner, 2005). Located in the first and closest circle surrounding the individual directly is the microsystem. Here the individual psychological life begins to form through human relations such as family and other interpersonal relationships with peers, friends, religious affiliations, and school and other civic settings in what Hoare (2008) describes as close-to-the-person contexts that includes the workplace in adults. In the next outer circle, the mesosystem is located and here the individual encounters indirect interactions with the environment that helps to influence the more external developmental factors including government policies, the economy, health and other social systems, and religious beliefs (Bronfenbrenner, 1979; Bronfenbrenner, 2005; Hoare, 2008; Rosa & Tudge, 2013).

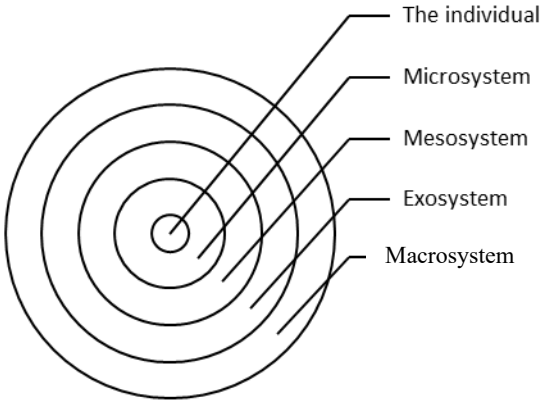

Figure 2. Bronfenbrenner's Ecology of Human Development Model. Adapted from Hoare, C. (2008). Models of adult develop in Bronfenbrenner's bioecological theory and Erikson's Biopsychological life stage theory: Moving to a more complete three-model view. In M. C. Smith, & N. Defrates-Densh (Eds.), *Handbook of Research on Adult Learning and Development*, (pp68-102). New York, NY: Routledge.

The penultimate circle, the exosystem, is where the individual interacts with larger organizations the government, the media, the economy, and laws and regulations

that can be persuasive but rests in the unconscious mind until later in life. The final and furthest circle, the macrosystem describes cultural norms (laws, folklore, mores, and taboos), ideology, and customs. See Figure 2 for visual depiction of the Ecology of Human Development Model. The chronosystem accounts for the temporal and sociohistorical factors framing a person's life. Over time, the individual accumulates changes that impact their lived experiences (Hoare, 2008).

Health and theories of stress – occupational stress response. Quick and Henderson (2016) introduced the concept of occupational stress, which can manifest into psychological, behavioral, medical disorders and diseases. Occupational stress can be divided into three streams: Causes, consequences, and modifiers. Causes or risk factors of occupational stress can be derived from specific work tasks demand that comes with high workload, low job security, and low control; role demands including conflict situations and role ambiguity, physical demands such as strenuous, long-standing, back-breaking jobs; and interpersonal demands: leaders' style, personality conflicts, and social density, all of which can lead to psychological stressors that are triggered by emotional response such as fear and rage (Quick & Henderson).

Quick and Henderson cautioned that vulnerability factors and response to stressors are different for the two genders. The consequences of occupational stress can be manifested in two ways: distress, which is unhealthy stress and eustress, which is the opposite. There are three types of distress (a) medical (major diseases such as cancer), psychological (anxiety, depression, PTSD), and behavioral distress (abuse of drugs and alcohol, workplace violence, SI - suicidal ideation, suicides, homicides). Individuals who display eustress, the healthy stress, are filled with hope, positivity, vigor, and job

satisfaction (Quick & Henderson). Modifiers include response from the individual him or herself, preventive health, positive psychology, and organizational protection/ intervention (Quick & Henderson). Harmon (2011) cautioned that not all trauma-related illnesses suffered by first responders are to be classified as PTSD and debriefings, once thought to be the panacea for treating PTSD, are not as effective as once thought. A better solution is to infuse a process known as psychological first aid – a triage approach whereby victims are restored to their former lives as quickly as possible after the traumatic event (Harmon).

Reflecting on the Lived Past Attack on the World Trade Center in 1993

The WTC structure, located in Battery Park at the southern end of Manhattan, was conceived at the 1939 New York's World's Fair. The vision at the time was to bring world peace through trade (Langmead, 2019). Designed by Manoru Yamaski, the twin towers were to reach 110 stories in height and become the tallest building in the western hemisphere. Challenges started with the first step - digging to reach the bedrock in preparing the foundation and excavating the landfill. The landfill that was removed was transplanted and added 23 more acres to the 4.48 million square feet of revenue generating space. Each tower had 99 elevators grouped to reach the three zones within each building (Langmead, 2019). The project began in 1966 and was completed in 1970 with the official dedication conducted in 1973. The title as the tallest building complex in the western hemisphere was short-lived as it only lasted for approximately six months before it was eclipsed by the completion of the Sears Tower built in Chicago (Langmead, 2019). A group of NYC construction executives proclaimed WTC was one of the top 10 constructive achievements in the 20th Century (Langmead, 2019).

WTC 1993 bombing. The parking garage in WTC was a scene of panic and destruction when a truck bomb exploded in the basement parking garage under WTC on February 26, 1993 (Mylroie, 1995). The bomb was designed with high explosives, cyanide gas and three gas cylinders with the intention to collapse the twin towers and using cyanide gas to invoke panic (The National Commission on Terrorist Attacks, 2004). Ranzi Yousef and a group of *Islamic Fundamentalists* killed six people and wounded over a 1042 (The National Commission on Terrorist Attacks, 2004; U. S. Fire Administration, 1993). There were cyanide gas canisters also contained within the truck bomb (Mylroie, 1995). The intent of the terrorists was not only to create damage by the bomb but to also to generate an alarm by combining the explosives in a chemical attack. The U. S. agencies, during the final analysis, determined the cyanide gas was consumed by the fire created by the initial explosion and therefore rendered harmless for the most part thereby diffusing a more serious disaster (Mylroie, 1995). *The New York Joint Terrorist Strike Force*, consisting of *NYPD* and the *Federal Bureau of Investigation (FBI)*, was able to find the vehicle identification number in the rubble within the garage. In a short period, the *FBI* was able to arrest one of the suspects attempting to recoup the deposit for the rental truck (Mylroie, 1995).

The building suffered significant damage including 2500 tons of debris covering the refrigeration plant, toxic smoke permeating throughout the WTC, flooded interior, broken windows, and the most massive *FDNY* response in history (U. S. Fire Administration, 1993). Mylroie (1995) reported that there were disconnections between the Justice Department and the national security agencies as they were not working their intelligence congruently. The *FBI*, who has the lead for investigating terrorism within the

U. S. was accused of not sharing their information because they were focusing on bringing the accused individuals to justice. The national security agencies, on the other hand, were concentrating their efforts on finding associated state-sponsored terrorist(s) (Mylroie, 1995; The 9/11 Commission Report, 2004).

Hartocollis (2005) revealed from the 1993 bombing that the Port Authority for New York and New Jersey (PA), knew as early as of 1984 and were warned by both intelligence officials and consultants, that the WTC was a target of Islamic fundamentalists and the parking garage was susceptible to bombings. Following the bombing, the PA was taken to court, and a panel of five judges found the PA negligent in the security of the WTC (Mcleod, 2008). Hartocollis (2005) the PA decision to reject the security enhancement recommendations were based in favor of collecting parking revenue.

Lesson learned from the 1993 WTC bombing. The aftermath of the 1993 bombing of WTC initiated congressional interest, and an investigation was convened to understand the cause, the threat levels, and the lessons learned from the WTC bombing of 1993 (U. S. Congress, 1994). The investigation included NYC, Federal and terrorist and law enforcement consultants who decided on and installed structural improvements to the WTC complex (Fishbach, 2001). Subsequently, evacuation steps, improvement measures, and implementation plans, and procedures were instituted at the WTC (CDC, 2004).

Simultaneously, the U. S. Congress sub-committee testimonies were reviewed and the preliminary findings for the cause and the potential suspects were known to law enforcement (The 9/11 Commission Report, 2004). Deliberations by congress, in 1993 to classify the bombing as either a domestic or state-sponsored terrorist act could not be

determined at the time. There were state-sponsored allegations, but at that point, no overwhelming intelligence was available to determine that a specific country or intelligence organization had sponsored the terrorists. It was mentioned on the record the *FBI* was not sharing intelligence with the State Department and other intelligent security agencies. There was no resolution or recommendation by this committee, but that same issue would arise again during the terrorist attacks at WTC on 9/11 (The 9/11 Commission Report, 2004).

During the testimony to Congress in the post1993 WTC attacks, the PA predicted that the *Federal Emergency Management Agency (FEMA)* will have an ever-increasing role in preparedness in the future and will have to be ready to for larger scale consequences from a major terrorist act. Testimony also summed up a significant political and strategic perspective from the 1993 bombing, stated the U. S. will not be capable of protecting all things all the time and suggested for future terrorist events "… to avoid overreaction, do not stray from well-thought-out domestic and foreign policies, do not look for scapegoats, and have realistic expectations in response to terrorist acts" (U. S. Congress, 1994, p. 74).

Recovery and restoration for the 1993 attack. WTC bombing was the worst destructive terrorist event to date in the U. S. Over two million gallons of water was required for pumping operations and the removal of 2.5 million tons of debris (U. S. Fire Administration, 1993). Restorations included fire protection systems in blast zones, backup generators, and phosphorescent signs to guide tenants on floors to stairwells in addition to the fitting in 1,600 emergency battery-powered lighting units in exit stairwells and phosphorus tape-paint put on to stair treads, handrails and perimeters of doorways in

fire stairwells. Additionally, six satellite communication control stations and evacuations chairs were made available to assist the disabled (U. S. Fire Administration, 1993).

EJ Electric, an electrical contractor, won an initial $28 million bid to increase security at WTC and started work in 1996. The goal was to increase integrated security (Fishbach, 2001). Hundreds of closed-circuit cameras and two million feet of fiber optics were installed (Fishbach, 2001). Turnstiles were installed to restrict access and control to the underground garage. The 55,000 tenants of the WTC were issued permanent identification (ID) cards, and all guests had to register and were issued guest ID cards with pictures to keep a log of all visitors (Fishbach, 2001). Finally, a command center was established in each tower, and a self-healing computer system was installed so if one computer went down another computer was designated to replace it. Fire alarms were connected to back up generators for emergency power, and the entire security system was established on a redundant loop. The model for the retrofit was to balance security with convenience (Fishbach, 2001).

All but six victims safely exited the WTC towers in the aftermath of the 1993 bombing. After-action planning resolved to refine evacuation plans, and actual evacuation drills were to be conducted (CDC, 2004). Better lighting was installed in the hallways, and fluorescent strips would be added to the edge of the stairs on the stairwells (CDC, 2004). Fire safety improvements increased the number of first responder guides assigned to help assist evacuees down and out of the building stairwells (CDC, 2004). Pulmonary and respiratory equipment was prestaged for contingencies for both evacuees and first responders to expedite evacuations and to avoid confusion on stairways and delays due to poor lighting and visibility (CDC, 2004).

The WTC Building 7 was a 47- story building that was renovated to house the OEM Command Headquarters. The OEM command moved into Building 7 in 1999. The decision for OEM relocate to Building 7 in the new WTC was not without controversy (Rashbaum, 2008). Concerns were reported and raised by NYPD and Secret Service officials relative to the relocation of WTC including but not limited to: Easy public access, proximity to the WTC complex, Building 7 location over a utility substation, and the location of a 1,200-gallon diesel fuel tank above ground level (Rashbaum, 2008). Also, the *National Security Agency's (NSA*) strategic intelligence department reported the building was a potential terrorist target and susceptible to a biological attack. During the terrorist attacks at WTC on 9/11 Building 7 was engulfed in fire for seven hours before it collapsed (Fishbach, 2001; Rashbaum, 2008)

Experiencing the Present Attacks on the World Trade Center on 9/11

Passenger jets as weapons of mass destruction. On 9/11, the hijackers cleared security check points systems that they had previously studied and knew the protocols and how to bypass them. All 19 hijackers were successful in their mission to aboard four aircrafts: American Airlines (AA) Flight 11, United Airlines (UA) Flight 175, AA Flight 77, and UA Flight 93. Having penetrated all four aircrafts, the hijackers outmaneuvered the flight crews and took control. The air defense systems, the Federal Aviation Administration (FAA) and the North American Aerospace Defense Command (NORAD) failed to communicate effectively. Having never encountered a situation where passenger planes were used as weapons of mass destruction, both organizations were unprepared and were forced to depend on improvisation to counterattack (The 9/11 Commission Report, 2004).

First plane. AA Flight 11 took off from Boston, Massachusetts in route to Los Angeles, California and at 8:46 am Eastern Standard Time (EST) crashed into the WTC *North* Tower with 24,000 gallons of jet fuel on board killing 81 passengers, 11 crew members, and five terrorists (Bensen, 2011; Locker, 2016).

Second plane. UA Flight 175 crashed into the WTC *South* Tower at 9:03 am EST with 9,118 gallons of jet fuel on board killing 56 passengers, 12 crew members, and five terrorists (Bensen, 2011; The 9/11 Commission Report, 2004).

Third plane. AA Flight 77 crashed into the Pentagon at 9:38 am EST with 7,500 gallons of jet fuel on board killing 58 passengers, eight crew members, and five terrorists (Bensen, 2011; Locker, 2016).

Fourth plane. UA Flight 93 crashed in an empty field in Shanksville, Pennsylvania at 10:03 am EST with 7,000 gallons of jet fuel on board killing 37 passengers, seven crew members, and four terrorists (Albertarose.org, 2019). The four 9/11 high jacked aircraft combined for a death toll of 246 which included 189 passengers, 38 crew members, and 19 terrorists (Albertarose.org, 2019; Bensen, 2011; Locker, 2016). The 9/11 Commission Report (2004) revealed the intended target of Flight 93 was either the White House or the Capital Building. The passengers on UA Flight 93 were believed to be aware of the previous attacks from friends and family as there five cell phone recorded conversations informing the passengers of the three previous high jacked airplanes were used for suicide attacks. The FAA also confirmed, via recordings, the passengers struggled with the terrorists in the attempt to gain control of UA Flight 93 just before the crash (The 9/11 Commission Report, 2004).

According to Darling (2010), orders were issued to shoot down UA Flight 93 amid all the confusion during 9/11. Orders were issued from the president's bunker underneath the White House – to deployed F15s and shoot down Flight 93. Darling expressed surprise at what he described as "historical grotesque moments" that such "definitive, lethal action" (Kindle location 1057) was so swiftly put into effect knowing that (a) U. S. citizens were on board and that (b) the order came from someone other than the President or the Secretary of Defense. Shortly, thereafter, it was acknowledged that the plane crashed on its own accord and was not shot down as previously thought. Darling, who was present at the execution of the orders, cited relief by all parties concerned and quoted one senior operative as stating that flight 93 was a "plane full of heroes, rather than a plane full of victims" (Kindle location 1058).

New York City's response. The attack on the WTC on 9/11 required the most substantial disaster response in U. S. history (Flood, 2011). Within minutes FDNY and NYPD units arrived and were on the scene, and the first incident command post was established in the North Tower lobby (Brown, 2002). Anticipating a disaster due to widespread reports of a year-end catastrophe in 2000, the NYC Mayor's office had anticipated a potential disaster the previous year, and the Deputy Mayor had already updated and backed-up the NYC computers and programs having expected a computer failure at the year's end of 2000, commonly referred to as Y2K (Barbaro, 2013). A detailed and comprehensive Standard Operating Procedure (SOP) manual was established and published for the anticipated Y2K disaster in 2000 (Scoppetta, 2008). The SOP manual listed contact numbers and the required coordination for an NYC 9/11 disaster and was used by the Deputy Mayor to help coordinate the 9/11 notifications to the White

House, Governor, National Guard, and city agencies relating to the terrorists' attacks (Barbaro, 2013). FDNY initial response was a five-alarm call which eventually grew to 10 additional supplemental calls for fire and rescue support. A total of 112 fire engines responded to Ground Zero, 58 Ladder Trucks support by five rescue companies were committed to the rescue and recovery effort (Flood, 2011). There were an estimated 2000, PAP and NYPD officers that responded to the scene attempting to rescue and providing security for the WTC Ground Zero disaster (Flood, 2011). Many off-duty NYPD, FDNY, PAP, private ambulances, emergency EMT's, and paramedics also responded without orders or assignments (Flood, 2001). The estimate of 13,000-15,000 people succeeded in surviving the initial attacks and were evacuated from the WTC (CDC, 2018).

The FDNY organized in the South Tower lobby and organized the evacuations from the North tower through a land bridge between the towers. FDNY preferred people to evacuate from the front entrance of the North Tower initially to protect the evacuees from for the debris that was falling then later to avoid the horrific circumstance of people jumping from the higher elevations who were overcome by the intense heat and smoke The FDNY took the brunt of the casualties with 20 fire companies no longer serviceable due to damaged vehicles and fatalities. In 102 minutes FDNY lost 343 souls or the equivalent of 4,400 years of experience (Flood, 2011; Scoppetta, 2008). PAP lost 37 and NYPD lost 23. Flood (2011) reported FDNY were using radios that were not effective in the towers and were the very same radios that FDNY used in the 1993 bombing. NYPD however, updated their communications and experienced more effective situational awareness that also included NYPD helicopters. The NYPD observers were able to relay

to their fellow NYPD officers the visual report of red-hot girders aligning the top of the South Tower, the information was not communicated to the 100 FDNY personnel still working the South Tower. (Brown, 2002; Flood, 2011). FDNY EMS ambulances were flooding Ground Zero without being dispatched and subsequently overloaded the FDNY radio network. Early on the dispatchers' ability to control the scene resulted in all kinds of accountability issues and traffic jams (Brown, 2002). Confusion and the unanticipated complexity of the disaster overwhelmed management of the scene. Some personnel had used their personal protective equipment (PPE), but many including the volunteers that responded refused to wear the PPE. (Jackson, Peterson, Bartis, LaTourette, Brahmakulam, Houser, & Sollinger, 2002). The loss of their colleagues, the confusion, and the helplessness that many responders experienced were in part a contributing factor for 274 FDNY retirements in 2001, which later jumped to 661 FDNY retirements in 2002 (Jackson et al., 2002; Scoppetta, 2008).

Military volunteer response. Several reservists, militia personnel, and veterans rushed to Ground Zero without orders (Bensburg, Werner, Steinar, & Miller, 2003). Two Army reservists on their way to work saw the smoking buildings and directly went to the Ground Zero to help. Both reserve soldiers went to the North Tower and helped triage and direct people to makeshift first aid stations. Bensburg et al. (2003) described the debris initially falling on the two reservists from the North Tower and eventually observed human bodies were also falling from higher elevations. When the second planes hit the South Tower, the debris and smoke drove people out of the WTC complex. The subsequent collapse of the South Tower chased the volunteers and the survivors out of Ground Zero (Bensburg et al., 2003).

NYSMF response. On the morning of 9/11, Air National Guard scrambled jet fighters from Rome, NY, Buzzards Bay, Massachusetts and Langley, Virginia to prepare to intercept high jacked passenger jet airliners (The 9/11 Commission Report, 2004). Later the same morning the Governor ordered TAG to alert the NYSMF and prepare to support Civil Authorities in NYC (DMNA, 2002). Staging areas at Stewart Air National Guard Base, Camp Smith, and Park Avenue Armory were established for assembly and mobilization. Majority of National Guard personnel received verbal orders to assemble and other NYSMF personnel in the vicinity of NYC voluntarily displaced to GZ (DMNA, 2002). The TAG recalled all key personnel, and within 24 hours 8,000 Guardsmen assembled. The Joint Operations Center became operational in Latham, NY and the New York State Governor declared a State of Emergency (DMNA, 2002).

The initial response from the NYSMF came from the Bronx with the 145th Maintenance Company assembled in their Armory, the102nd Maintenance Company assembled at Marey Avenue, in Brooklyn, the 719th Transportation Company, and the 1569th Transportation Company assembled at the Fifth Avenue Armory (DMNA, 2002). Also, response came from the Headquarters and Headquarters Company (HHC), the 107th Support Group assembles in Park Avenue Armory, the 69th infantry battalion that reports to the Lexington Avenue Armory, the Jamaica Queens Headquarters, and the Headquarters Battalion (HHB) located at 1-258th Field Artillery assembled and in Staten Island as well as the HHC 1-101 Cavalry assembled (DMNA).

Response also came from the Second Civil Support Team (CST) capable of detecting and communicating in a chemical, biological, radiological, and nuclear and explosive environment (CBRNE) deployed to Ground Zero (DMNA, 2002). The NY Air

National Guard deployed Air Patrols, Air Refueling, and Tactical Airlifts. NYSMF deployed engineers, military police, and medical units to Ground Zero (DMNA). The 53rd Troop Command established a Command Headquarters with 1500 troops within hours at the Park Avenue Armory. Counterdrug teams were deployed to ports of entry to support U. S. Border Patrol and the Medical Detachment. In addition, to these immediate deployments, NYSMF elements were also deployed to Operation WTC to augment security at airports (DMNA, 2002). As troop deployments were ordered south, troop locations were expanded to Park Avenue and Lexington Avenue Armories. Javits Center became a logistical support center, as were Randall's Island, Governor's Island, and Battery Park (DMNA) locations. The security operations at the airports, tunnels, and nuclear plants, first formed on 9/11, were named Joint Task Force Empire Shield. The Task Force still exists and continues their respective missions as of this date (Greenhill, 2009).

NYSMF's immediate missions included site and perimeter security at Ground Zero. Support also included escort services for Very Important Persons (VIP's) throughout the disaster area, the organization and distribution of supplies and donations from the Javits Center, and the augmentation of pedestrian and traffic control in support of NYPD (DMNA, 2002). The presence of NYSMF troops who were deployed throughout the NYC area reportedly had a calming effect on the population and fellow responders (DMNA). NYSMF follow-on missions included credentialing at all checkpoints through-out the disaster area, handling the security points at the perimeter of Ground Zero and NYC OEM headquarters, and providing security for the nuclear reactor sites throughout the state. FEMA also came under the purview of the NYSMF in the

organization and operation of logistical distribution and the NYSMF also augmented security at the NYC tunnels, bridges, and airports. Additional analytic assistance was offered to the NY State Department of Health and Honor Guards were provided to the FDNY Memorial Services by the NYSMF (DMNA). Most missions were conducted under Title 32, NY State orders, other units such as the 1st Battalion 127th Armor were conducted under Title 10, federal orders, in support of a homeland security force protection called Operation Noble Eagle (DMNA).

The massive boat evacuation of Manhattan on 9/11. LaGrone (2014) portrayed the Coast Guard led water evacuations during the terrorist attacks on 9/11 at the WTC. Sparks (2017) stated that maritime sailors had the capability and skillsets to react to VUCA type disasters successfully. LaGrone (2014) differed and reported that the Coast Guard led and controlled the 9/11 evacuations. The facts by both sources do agree that the evacuations on the southern tip of Manhattan superseded the evacuations in 1940 at Dunkirk during World War II. In nine hours, an estimated 500,000 people were evacuated by water during the WTC 9/11 on the day of the attacks (LaGrone, 2014; Parks, 2017). Parks (2017) argued that civilian volunteers, without any instructions and formal incident command training, took the initiative and demonstrated that the civilian mariners possessed the capacity to adapt and improvise. With the knowledge gained from working the local waters, the civilian mariners that consist of captains, mates, and deckhands worked the tugs, ferries, dining vessels, sight-seeing ships, and private vessels as though they were experts in the field. All the mariners reacted to the 9/11 disaster and provided the bridge and means for people to escape the island of Manhattan (Park, 2017). Hanks (2011) highlighted this extraordinary commitment to saving lives and summarized

the story of the mariners, their actions, and their ability to rescue so many in a relatively short period.

Also, the Government Accounting Office (GAO) (2009) stated that the air force lacked proper documentation and policy directives such as definition for roles and responsibilities to handle the complexities of Air Sovereignty Alert (ASA) operations in protecting U. S. airspace. Recommendations put forward by the GOA for the future included the Air Force establishment of a timetable to complete its mission, incorporated a 6-year future in the ASA mission, and ensured new fighter jet capabilities were identified and secured.

Health risks/vulnerabilities. Yu, Brackbill, Locke, Stellman, and Gargano (2016), using logistic regression models, studied the health impact on 7,662 workers from the 9/11 era in New York to determine if any association existed between chronic health conditions and job loss from early retirement (before age 60). The results showed that there was a correlation between participants who suffered from chronic health condition including PTSD and those reporting early retirement. Yu et al. concluded that when a disaster of the magnitude of 9/11 strikes, authorities should consider funding for such contingencies due to the negative economic impact from early labor force on disaster response preparedness plans.

Fresh Kills mound. The unimaginable shock and confusion immense structures, people jumping from the Twin Towers to their death, and human remains scattered through Ground Zero was further exacerbated with the emotional handling of mass funerals, dismembered human remains, and the less sensitive but arduous physical labor tasks of the removal massive debris as part of the 9/11 DRP process at WTC (Conklin,

2018; DePalma, 2004; Hartocollis, 2007; Horne, 2018; Powell, 2013). DePalma (2004) discussed ways for properly disposing of body parts and other debris accumulated from GZ. Staten Island landfill near the *Fresh Kills* river also called 9/11 mound was determined to be the site to store the WTC debris. In May 2002, 108,000 truckloads hauled 1.8 million tons of rubble (including victims' remains) to the Staten Island landfill (Horne, 2018). The expedient removal from the Island of Manhattan to the Fresh Kills landfill required no finite sifting of human remains (Hartocollis, 2007). Reports of birds feeding off the landfill and human remains contained in debris removed from the landfill to repave roads was not well received by authorities and families whose loved ones may have been contained within the debris (Hartocollis, 2007).

Technology and information sharing as an intelligence asset. Kramer (2005) introduced the concept of the *tragedy of the informational commons*, derived from the *tragedy of the commons (TOTC),* a 1968 article by Garrett Hardin. Historically, the original tragedy occurred in Great Britain and Ireland in the 1830s when the phrase was coined by William Forster Lloyd who was describing a situation where individuals owned common land, and each would graze cattle on the land and share the cost collectively. The project was not sustainable because each landowner was attempting to maximizing profits and eventually the crop died. In today's society (2019), the TOTC has assumed a new meaning in the Education for Sustainable Development context initiated by UNESCO – United Nations Education, Scientific, and Cultural Organization.

In Relating the TOTC philosophy to the 9/11 attacks, Kramer surmised that "individual rationality… led inexorably to collective folly" (Para. 6) thus, leading to "cognitive, motivational, and social psychological factors that contributed to breakdown

in cooperative information sharing among the intelligence agencies and other branches of government" (Para. 8). Using the 9/11 report as a backdrop, Kramer cited intelligence failures stemming from Foreign Intelligence Surveillance Act (FISA) documents in the pre9/11 period that reported on plans for the impending attack, but the intelligence encountered a process termed "The Wall" whereby information is not shared but was "undermined or subverted" (Para. 10).

Anticipating and Imagining an Improved and Terrorist-Free Future

The 9/11 Commission. The National Commission on Terrorist Attacks Upon the United States (2004) is a report created by the 9/11 commission, a Congressional investigation into the cause and effect of the factors leading to the 9/11 attacks and recommendations to avoid the magnitude of new type of terrorist threats and sponsored disasters. The report was an *all agency - all hands-on deck* compilation of intelligence and recommendations to shore up future DRP at a national level. The meticulous report addressed circumstances leading up to the hijackings of the four flights during 9/11, developing a homeland defense strategy, establish a national crises plan, the new terrorism sponsored by fundamentalist ideology, and counterterrorism as well as responses to the new threat war planning, growing a global strategy, and accomplishing all of the above with unity of effort with both foreign and domestic partners (Blackerby, 2011; The National Commission on Terrorist Attacks Upon the United States (2004).

Judiciary and fiduciary approach. Mcculloch and Pickering (2009) drew parallel to the precrime measures engaged in post9/11 and the postcrime traditional process pre9/11. Since 9/11, a paradigm shift has occurred in the adjudication process of criminal justice that is causing tensions between operatives who favor an impartial

criminal justice system and those in favor of a "politically charged practice" under the banner of national security (Mcculloch & Pickering, 2009, p. 640). The better approach to avoid "highly discriminatory, preemptive strategies" (p. 641), according to Mcculloch and Pickering, is to revert to the postcrime judiciary and fiduciary approach of the past that involves due process to assure a "presumption of innocence and moves through a number of discrete stages from investigation to charge, trial and verdict" (p. 640).

Department of Homeland Security. Following the 9/11 attacks, "the demarcation of national security and homeland security was erased" (Ippolito, 2014, Para. 1) and the DHS was established (Department of Homeland Security, 2015). The then president (in 9/11) acknowledged the inconsistencies, the unsureness of ownership, the lack of communication displayed in the disaster response preparedness decided that by "transforming and realizing the current confusing patchwork of government activities" (Para. 1), the DHS was needed to oversee and safeguard the nation from future terrorist attacks (DHS).

Global War on Terrorism (GWOT) and two ensuing wars. The U. S. initiated GWOT following the 9/11 attacks by invading Afghanistan October 7, 2001 and Iraq in March 2003 (Bassil, 2012, Leonhard, n.d.). Citing a report published by *Brown University's Watson Institute for International and Public Affairs*, O'Connor (2018) stated that the U. S. government spent six trillion dollars on wars and war-related expenses and obligations. By fighting in the wars in questions, over a million people including military forces and civilians have been killed since 9/11 in the hopes of staving off other such attacks. The irony, according to Brown report, is that the very same cost is not sustainable and therefore making the U. S. vulnerable to future terror attacks

(O'Connor, 2018). The solution offered by the report is for defense spending to concentrate on the opposite – ending wars and instituting disaster response preparedness plans (O'Connor, 2018). Brown University's *Cost of War Project* released the collective casualties from all the GWOT conflicts in Afghanistan, Iraq, and Pakistan reporting 480,000 recorded deaths by violence (Hussain, 2018). Hussain (2018) reported that 244,000 were civilian fatalities directly linked to violence. The number of violent deaths does not include indirect deaths due to displacement and disease (Hussain, 2002). Bassil (2012) argued that the U. S. had motives other than defending its boarders from terrorism or the acquisition of weapons of mass destruction and that the real reason the U. S. invaded Iraq was to secure the oil assets in the Middle East on behalf of the U. S. and its Western and Middle Eastern allies. Bassil (2012) believed the ten years of war in the Middle East will continue and does not see an end to the conflict. The President, with the consent of Congress, authorized the U. S. Armed Forces to combat terrorism and initiate bombing attacks against the Afghanistan (Shah, 1999). The bombing, also supported by the United Nations was the beginning of Operation Enduring Freedom.

Smith and Zeigler (2017) conducted a study on GWOT before and after 9/11 to determine if the world is safer or more dangerous since the attacks. The study encompassed the years 1970 (postCold War) to 2014 by accessing the Global Terrorism Database (GTD). Over 140,000 incidences of terror in 194 countries were analyzed. The results showed that in general, post9/11 the world was less terror-prone than pre9/11. Countries not engaged in civil wars, were 60% more likely to experience a terror attack pre9/11 that post9/11. However, states with a high Muslim population in the pre/911 era experienced less domestic terror that post 9/11. In the post 9/11 era states with a high

Muslim population are experiencing more incidences of both domestic and international terror attacks up to 2014 (Smith & Zeigler, 2017). Additionally, coming out the GWOT was the Real ID Act of 2005 (H. R. 1268 – Title II), was passed to set enhanced security standards for federal identification (ID) including driver's licenses and personal ID cards (The Read ID Act, 2005).

Intelligence failure. However, for some, the invasion of Iraq was a "colossal failure" (Ofek, 2017, Para. 1) as no significant trace of WMD was found to substantiate the rationale for war against Iraq. Further findings of intelligence blunders of huge proportions were also confirmed by the CIA (Associated Press, 2005). Reports, in the form of assessments by several intelligence experts on terrorism and counterterrorism, on the 9/11 attacks and the subsequent "intelligence catastrophe" cast blame on numerous flaws in the system ranging from "bureaucratic obstruction, regulatory constraints to agencies', rivalries, lack of resources, and poor coordination" (Public Broadcasting Service, 2014, Para. 1).

The Global War on Terrorism in Afghanistan were bomber attacks on key Taliban Army positions in support of the Afghanistan government forces (CFR, 2019.). In December of 2001, the United Nations established a peacekeeping force that included the U. S. military and quickly forced the Taliban to the Pakistan borders (CFR, 2019). To date, National Guard units are integrated into rotations to both Afghanistan and Iraq but not just for security missions but also for reconstruction and medical aid (CFR, 2019.; Flynn, 2008). Ruiz (2013) added that the Veteran Administration (VA) released casualty statistics of the service men and women deployed to Iraq and Afghanistan. Over 2.6 million casualties were treated of which 270,000 were brain injuries. Broch (2003)

compared intelligence failures between Pearl Harbor and 9/11 to determine the levels of unpreparedness from the military response.

WTC rebuilt and OEM and relocated. NYC Emergency Management (formerly OEM) relocated its headquarters to a new-state-of-the-art building in Brooklyn, New York (NYC Emergency Management, 2019). The then Mayor's office emphasized the edifice is the first *green* municipal building in NYC. The former building was decimated in the 9/11 attacks on the WTC (NYC Emergency Management). The replacement tower, formerly called the *Freedom Tower* by the former governor of NY, changed courses and was renamed *One World Trade Center* by the new owners (AP, 2009). The building is a supertall skyscraper at 102 stories and 1,776 feet high costing over $3.1 billion (Charney, 2014).

Critical Incident Stress (CIS) and Physical Health Impact

CIS. According to the CDC (2002), CIS produces massive stress that may overwhelm the individual's ability to cope. This type of stress can manifest as Posttraumatic Stress Disorder – PTSD. CIS is a traumatizing event that usually affects first responders. To mitigate the effects of CIS, a team of medical experts who will facilitate individual and groups through an intervention to help them overcome the effects of CIS (Matuszak, 2019).

Matuszak (2019), writing on "rescuing the rescuers" (Para. 4), cited the American Psychiatric Association statistic that 75% of first responders (police, military, paramedics, firefighters, rescue, hospital, healthcare workers), suffer from symptoms of psychological distress; and Hammond and Brooks (2001) mentioned the "physical sequelae" suffered in the aftermath of a disaster that the first responders served in (Abst.).

Additionally, the risk factors not only relate to the victims but to the workers as well (Bray, Camlin, Fairbank, Dunteman, & Wheeless, 2001; Castellano & Plionis, 2006; Guenthner, 2012; Marshall, Bryant, Amsel, Jun Suh, Cook, & Neria, 2007; Matuszak, 2019; Occupational Safety and Health Administration [OSHA], n.d.; Xue, Ge, Tang, Liu, Kang, Wang, & Zang, 2015).

Health impact. The literature is replete with incidences and significant impacts stemming from the 9/11 terrorist attacks on the U. S., but information of the significance of health and wellness fallout was worse than expected and was recently discovered (Berkowitz, Wolff, & Janevic, 2003; Crane et al, 2014; Hammond & Brooks, 2001; Jackson et al., 2002; Lorber et al., 2007; Luginaah, X Xu, & Fung, 2006; Matuszak, 2019; Neria, Digrande, & Adams, 2011; Otis, 2016; Parks, 2017, Smith, 2006, Zelman, 2006). The complex nature of the disaster's psychiatric disorders was complicated by not just the toxic dust but the exposure to death and shock of the magnitude of the destruction (Crane et al.). The poor health and the ill-effects of the toxic exposure to FDNY who oversaw the rescue and the recovery at Ground Zero during 9/11 and subsequent days, weeks, and months is well documented including exposure to the general population, the implications for growth restrictions of babies born after the 9/11 attacks, and the physical effects on the part of the Canadians but is sparse regarding the health effects of NYSMF (Berkowitz et al, 2003; Crane et al, 2014). Respirators were required but were not readily available to be distributed to the NYSMF and volunteers at the scene.

In the first few days after the attacks, the scene management was lax and supervision to regulate the proper wearing of PPE was not evident (Jackson et al., 2002). Many of the workers were not used to working in debris and not only lacked breathing

protection but were also lacking the safety equipment necessary for rescue and recovery work (Crane et al., 2014; Jackson, 2002). Lorber et al. (2007) discussed the numerous studies conducted by the Environmental Protection Agency (EPA), the Office of Research and Development (ORD), Occupational Safety and Health Administration (OSHA), and the Agency for Toxic Substances and Diseases (ATSDR) specifically singling out Firefighters, rescue and recovery workers to include research on indoor pollution in local residences. Research has surfaced that indicates the severe health deterioration included physical and mental concerns from the 9/11 attacks (CDC, 2004). NYSMF responders and the massive water evacuation from Manhattan during 9/11 were also significant events that have not received the same level of media attention as have the other DRP events (Parks, 2017).

It should be noted that firefighters during 9/11, came throughout the U. S. to help. Numerous firefighters from other countries provided additional support during 9/11 (Lorber et al., 2007). Luginaah et al. (2006) reported that the air toxins from the 9/11 WTC attacks polluted the air as far north as the Canadian border. Fanning and Goldenberg (2001) reported that the incident stress or PTSD that was experienced by the NYSMF during the initial days and weeks during the rescue and recovery at Ground Zero. The 9/11 Commission Report (2004) reported that "civilians, firefighters, police officers, emergency, medical technicians, and emergency management professionals exhibited steady determination and resolve under horrifying conditions on 9/11. Their actions saved lives and inspired a nation" (p.15).

Critique of the Literature

Kramer's (2005) discussion on the lack of shared information pre9/11 added

to the discourse in that such discussions are not widely reviewed in the literature. Additionally, Borch (2003) discussed the comparison between the Japanese Pearl Harbor attack on December 7, 1941, termed as 12/7, and the terrorist attacks on 9/11 stating that they are vastly two different theaters of war and should not be compared for reasons that 12/7 was a military attack on Hawaii but that 9/11 in NY was not, that 12/7 was defended by military hierarchy personnel such as admirals and generals, military personnel were not responsible for mitigating the 9/11 attacks; and that whereas 12/7 can be termed a "military attack by naval aviators upon military targets", the 9/11 attacks was a "criminal act carried out by criminals on essentially civilian targets" (Para. 4). As a result of these defenses, the NYSMF should not be blamed for unpreparedness for the 9/11 attacks but should be prepared for future disasters.

The literature is replete with incidences and consequential impacts stemming from the 9/11 terrorist attacks on the U. S., but information of the significance of health and wellness fallout is worse than expected according to Adams Otis (2016). Research is surfacing that indicates the severe effects of the 9/11 attacks in terms of health and wellness. NYMSF responders and the water evacuations from Manhattan during 9/11 are two significant events that received the same level of media coverage and/or research as have the other DRP events (Parks, 2017).

Methodological Approaches

This study followed the qualitative methodology using nonexperimental research, combined with oral history and heuristic approach within an existential and content analysis design (Edmonds and Kennedy, 2013). An exploratory and practical inquiry utilizing flexible methods with verification, tests of validity, reliability and a range of

findings to describe the 9/11 terrorist attacks on the U. S. framed the study. The life existential design, based on (as) the past attacks on the WTC in 1993 based on testimonies from survivors; (b) the present, from the perspectives of NYSMF oral histories collected at the time of the 9/11 WTC attacks on the WTC, and future contexts of the effects of 9/11 transformations (Smith, Flowers, & Larkin, 2012). Ross (2004) stated that most studies relating to terrorists, their actions, and ways to counteract terrorists' actions uses the qualitative methodology, split between primary and secondary data sources for an oral history approach, and a content analysis design. The focus of this study was on the latter design.

The underlying reason for selecting a qualitative methodology was to "understand the psychology of participants and the social setting in which they operate" (Ross, 2004, p. 26). In addition, most such studies use content analysis to tap in the textual importance of the words to reveal '"underlying trends and orientations"' … "from newspapers, personal accounts, public domain, and pop culture" (p. 3). Additionally, Ross found that qualitative studies on terrorism tend to focus on biographies of the terrorist, case studies by type of terrorism, the region/territory affected, or a specific terrorist attack. The latter approach was used for this study using archival interviews employing oral history approach, and based on interviews collected from survivors of the 1993 attack on the WTC, the NYSMF in the immediate aftermath of 9/11; and from NYC EMS personnel on the future of DRP (9/11Memorial (a), 2019; 9/11 Memorial (b), 2019 & NYS DMNA, 2001). The reason for selecting a qualitative methodology was to "understand the psychology of participants and the social setting in which they operate" (Ross, p. 26). Hiles (2001) stated that:

> whether different cultures and groups of people, at different times in human history, have come up with very different visions of reality, of our place in it, and the associated practices that help give meaning to human existence. However, what does matter is the recognition of the crucial role that transpersonal beliefs and practices play in people's lives, and the important place these can have in explaining and understanding an individual's experience, actions, growth and development. (Para 13)

Also, heuristics was included in the study to "help discover structure or patterns structural changes" (Kleining & Witt, 2001, 2007, Para. 3). Kleining and Witt advised on four rules to capitalize on when conducting heuristic research. The first rule is that the researcher should remove all preconceptions on the phenomenon under study and should be open to new ideas and concepts revealed in the literature and the entire research process. Although this rule appears practical for researchers to be open-minded, it is not easy to accomplish given that researchers tend to hone-in on their own beliefs and reject the scientific evidence as presented in the research process (Kleining & Witt). The second rule is that research is a reiterative process and may unearth different or disconfirming evidence that must be considered as part of the process. Such changes should be "regarded as a positive sign of accumulation of knowledge" and researchers are reminded many major discoveries were made "by chance" (Kleining & Witt, Para. 9). The third rule advised researchers that data should be mined under the guidance of "maximum structural variation" to avoid one-sidedness and limited accountability. Data should be presented from the perspective of "past and present…in different situations, from different respondents…from different times and cultures" (Kleining & Witt, Para. 10).

The fourth and final rule states that even within diverse discoveries, there are similarities in the data that complemented the differences as the researcher moves from more concrete terms to more abstracted forms of data analysis that keeps the concrete details intact (Kleining & Witt).

Additionally, Freitas, Ribeiro, Brandao, Azevedo de Almeida, Neri de Souza, and Costa (2019) discussed the various types of computer assisted qualitative data analysis software (CAQDAS) packages available to help researchers with the "laborious process" (p. 88) of making sense of the raw data. By employing the use of CAQDAS tools, researchers derive benefits of easy access, self-learning, and autonomy/better time management as well as a simplified process, more functionality, and practical user experience (Freitas at al.). Among the CAQDAS packages available to qualitative researchers are NVivo and Linguistic Inquiry Word Count (LIWC). LIWC (pronounced Luke), a textual analysis software package, was used for data analysis in this study (Miller, 2017).

Pennebaker, Boyd, Jordan, and Blackburn (2015b) discussed the psychometric validation categories of the LIWC. Psychometric properties include the Cronbach alpha coefficients of the domains, which help to determine the reliability of the instrument as well as to provide justified inferences from word frequencies to psychosocial states of the informants. Words used in day-to-day living that relates to beliefs, social underpinnings, and thinking are configured in the patterns. When the data is textually analyzed, they produce the discovered psychological values of the informants' oral histories.

Synthesis of the Literature Reviewed

The study was framed in the context of Van Manen's life existential by

reflecting on the lived past, the experiencing the present of the 9/11 attacks on the WTC, and the anticipating and imagining an improved terrorist-free future (Van Manen, 2016). The conceptual framework covered theories and models impacting individuals, groups/teams/units, and systems. For individuals, theorists and theories/models consulted were Jung, Bandura, Maslow, and Vygotsky. For groups, teams, and units, theorists and theories models presented were group dynamics, Hofstede, organizational culture and behaviors, Seligman, and AI. For the systems, theorists and theories/models accessed were OD, planned change, leadership styles, Senge, and Leibenstein.

The literature focused on the 9/11 attacks on the WTC that changed the paradigm for all first response agencies on DRP specifically stemming from intentional mass destruction acts. The complexity of the destruction resulting from two airliners full of fuel and their impact on the two tallest structures in NYC was not anticipated therefore no adequate DPR was imminent (Jackson et al, 2002; Nighswonger, 2002; NYC Emergency Management, 2019; NYS DMNA, 2002; Scoppetta, 2008; The 9/11 Commission Report, 2004). Following is the summary on three of the several main first responders.

FDNY, NYPD, and PAPD. Despite the heroic efforts during the initial response by the FDNY, it was inadequate as 450 emergency responders died (Jackson et al, 2002). With the piles of debris including asbestos, glass, concrete, heat, toxic gases, and a range of other hazardous materials (HAZMAT) present, PPE was inadequate and initial scene management was not controlled (Adams Otis, 2016; Jackson et al., 2002). Appropriate equipment to include specialized gloves, debris stabilizing equipment, eyewear, and appropriate respirators were deemed necessary for future responses. The magnitude in

terms of the scale for the procurement, additional training required and making the equipment accessible was determined to be justified (Jackson et al., 2002). Newer reliable radios were acquired for FDNY with more channels and ultra-high frequency (UHF) bands with the ability to communicate with other agencies were appropriated (Scoppetta, 2008).

The FDNY needed a new operation center and in 2006 established a situational awareness suite equipped with the latest technology to provide an enhanced ability to direct operations remotely. New face masks for the fire-fighters were issued and protected from gas and chemical agents (Scoppetta, 2008). The requirement for radiation detectors was determined and became an integral part of the fire-fighters standard kit. Scoppetta (2008) detailed and defined the City Incident Management System (CIMS) which was created and adapted by NYC to mirror the National Incident Command System (NIMS). The NIMS established, by DHS, became the general procedure and organization program that provided detailed job descriptions, laid out how to form functioning staffs and have been successfully integrated. Standard terminology and standardize reporting procedures were included in the CIMS program and issued to all NYC agencies (Scoppetta, 2008).

NYC also adapted Emergency Response Teams (ERT) that originated and used by the U. S. Forestry Department. The essence of the ERT was to established command and control units that would work in shifts. Forest fires were extended duration operations that would often last weeks (Scoppetta, 2008). Following the 9/11 WTC disaster that lasted months, FDNY took the initiative to establish ERT's in 2003. They trained to provide long term command and control within the FDNY response. In 2005

the ERT's and 650 FDNY firefighters deployed and were effective in mission support during the Hurricane Katrina disaster. In 2006, DHS established a direct intelligence link with FDNY to remain current with up to date intelligence threats to NYC (Scoppetta, 2008). The contributions of both the NYPD and the PAPD relative to the 9/11 attacks are well documented. Both units were trained and equipped with the proper tools for appropriate response (Crane et al., 2014).

NYSMF. Participation in the 9/11 disaster and recovery was not as well recognized as that of the FDNY and the NYPD/PAPD due to their numbers and early response to the scene and their number of souls lost due to their heroic presence and commitment. The role of the NYSMF was initially staged in the perimeter of WTC and surrounding areas to protect against future attacks and provide security thereby allowing those better prepared to search and rescue to function without the unnecessary fear of intrusion. Additionally, military-based chaplains and medics were on hand to offer solace when needed.

Lessons learned. Teaching the history, understanding, and relating how to share the 9/11 experience to young students creates an enigma (Ojalvo, 2011). Specific ideas as teaching the topic of the 9/11 disaster and not just having students memorize the dates without context is a most important learning tool. The arts, videos, stories, and social media may help to convey the history may help students understand the concept of citizenship and the desire to establish a foundation based on the history of 9/11 (Ojalvo, 2011). Specific to the military, new educational bill was passed post 9/11 to encourage military veterans in their educational pursuits. The *Post9/11 Veterans Education Assistance Act of 2008*, also known as the *Post9/11 GI Bill*, was passed into law by

Congress on June 30, 2008. A study conducted by Zhang (2017) on the impact of the post9/11 GI Bill found that the bill increased college enrollment by approximately 3% among veterans and that the immediate impact was high but has since waned. Zhang also found that younger veterans are more eager to pursue a college degree than older veterans. Finally, the study found that the highest educational attainment was observed among the veterans who already held a master's degree.

Honors/accolades. Flynn (2008) perspective originated from the rescue and recovery experience at Ground Zero. The 69th Battalion also known as the *Fighting Irish*, was one of the first National Guards units to respond to the WTC attacks. The fighting 69th worked security at the scene at Ground Zero, and guarded bridges, tunnels, and the U. S. Military Academy at West Point. The Fighting 69th played multiple roles as FDNY and NYPD members, accounted for in the attack at the WTC. Also, the soldiers witnessed the killing of many of their colleagues, friends, and fellow citizens (Flynn, 2008). Flynn (2008) emphasized that his fellow National Guardsmen comprising a large contingent of immigrants who lacked equipment and training were motivated to make a difference when they were deployed to Iraq in 69th missions' most perilous areas. Though they suffered several casualties in Baghdad and some of the heavy fighting areas in the desserts, the Fighting 69th unit was very successful in its missions of route security. Flynn expressed pride in their accomplishments post9/11 and their transformation as novices in a foreign war to battle-worn heroes. Not only were the Fighting 69th mobilized local heroes, they were also symbolized as one of NY's finest representatives in a foreign war.

Research Questions

The overarching central question being explored is: What meaning do the 1993 bombing and the 9/11 terrorist attacks on the WTC have on the past, present, and future informants in respect to disaster response preparedness? The subquestions are as follows:

Research Question 1. What were the 1993 WTC bombing *past* informants' experiences with disaster response preparedness as survivors? The evidence was sourced from (a) historical data, (b) four *archival* interviews conducted pre9/11, and (c) LIWC psychological processes using content analysis.

The sub questions are: Who were the attackers? Where were they from? Where and when did the attack take place? Who were the first responders? What missteps occurred? What lessons were learned? What actions were taken and why?

Research Question 2. What were the NYSMF *current* informants' lived experiences dealing disaster response preparedness at the WTC on 9/11 and what were the effects of the toxic environment at Ground Zero, and the health concerns that surfaced? The evidence was sourced from (a) seven *archival* interviews conducted on 9/11 and the subsequent weeks following the attacks, (b) historical data, and (c) the LIWC psychological processes using content analysis.

The sub questions were: Who were the attackers? Where were they from? Where and when did the attack take place? Who were the first responders? What missteps occurred with NYSMF? What were their first impressions of Ground Zero? How did the communication channels work? Were the channels opened and functional? What was the technological impact? What toxic environment/health concerns surfaced?

Research Question 3. What were the EMS *future* informants' perspectives, post9/11, on disaster response preparedness? The evidence was sourced (a) from five *archival* interviews with emergency management services (EMS) personnel, (b) from historical and current data on what disaster response preparedness changes have been implemented since the 9/11 attacks that impact not only the NYSMF but also the wider community, and (c) from the LIWC psychological processes using content analysis.

The sub questions were: What changes have since been implemented in response to the 9/11 terrorist attacks that impact not only the NYSMF but also the wider community? What reports were commissioned and by whom? What laws were passed? Why and where were the wars started? How have health concerns been treated? What lessons were learned? What honors were bestowed on the NYSMF personnel who served during the 9/11 WTC attacks?

Chapter 3: Methodology

Aim of the Study

This study explored the impact of the World Trade Center September 11, 2001 Terrorists Attacks on the NYSMF in terms of DRP, the effects of the incident stress, and the effects of working in a toxic environment as a first responder (Fanning & Goldenberg, 2001). Nineteen hijackers on 9/11 launched a surprise attack on the United States that rendered the Armed Forces vulnerable in the initial hours. The NYSMF was caught off guard just as was the other government agencies emergency responders. The aim of the study was to reflect on the DRP to the February 26, 1993 attack on the WTC using historical data (past), experience the September 11, 2001 attacks on the WTC through archival interviews (present), and review the forward-looking perspective to see what types of DRP has been implemented to counter against another attack (future).

Chapter 3 detailed the qualitative research approach, participants/informants, data collection tools, and procedures as well as how the data was analyzed and the ethical considerations that was employed in the study.

Qualitative Research Methodology

The qualitative approach to research provides a unique grounding position from which to conduct research that foster ways of asking questions and provides a point of view into the social world whose goal is to obtain understandings and meanings of the context presented (Hesse-Biber, 2017). Another goal of qualitative research is to determine what happened and why to inform research, the researcher, and the audience of the "relevance of the findings" (Gay et al., 2009, p. 378). The social from "experiences, circumstances, and situations" such as "words, texts, images, and other objects are the

focus of qualitative research" (Hesse-Biber, p. 4). To accomplish this feat, qualitative researchers gather data from participants to extract multiple meanings and understandings (Hesse-Biber). However, this is not to say that qualitative researchers only gather textual data, or that their quantitative counterpart does not gather worded data. Whereas qualitatively driven researchers focus attention on *who, how, why,* and/or *what* of a phenomenon, quantitatively driven researchers tend to zone in on the *why* as a "testable hypothesis" to determine "cause and effect relationships" (p. 4). Chenail (2011) added to the discourse that researchers should embrace pragmatic curiosity and hone an "open-ended inquisitiveness" (p. 1716) on not only the how, why, or what perspectives as Hesse-Biber (2017) stated but also the who, when, and/or where of the topic under study.

How the researcher will generate data when studying the phenomenon – administering surveys, conducting interviews, making observations, reviewing transcripts of previously collected interviews or data, or gathering journals.

Why would a researcher want to study the phenomenon – "to inform, perform, reform, transform, describe, interpret, explain, confirm, criticize, suggest, evaluate or assess some aspect of the participants' lives" (Chenail, 2011).

What aspect of the participants' lives do researchers want to unearth – experiences on certain phenomenon, an opinion of someone else's experience – college dorm life, online classroom, teaching, fighting wars/terrorists, or responding to disaster such as the 9/11 attacks on WTC.

Who the researcher will study to learn about their perspectives – students, instructors, factory workers, first responders, or military personnel.

When in time will the researcher choose to focus attention on the participants: as children, adolescents, adults, old age, as students, as employees/active duty, as retirees/veterans.

Where will the researcher search to find and to interact with the participants: whether live or retrospectively, observations in natural settings, interviewing individuals or focus groups face-to-face, online, or over telephone. Lochmiller and Lester (2017) added that qualitative researchers should study "real-world situations as they unfold naturally…in a nonmanipulative and noncontrolling" way (p. 94).

Chenail (2011) also cautioned that qualitative research is a recursive and reflective process resulting in reassessments for "effectiveness and coherence" through "inspiration of creative improvisations" especially given that "no design choice is right in and of itself" (Chenail, 2011, p. 1722). The reiterative process will also help in keeping the methodological design "transparent, coherent, and simple" (p. 1722). Explore "variations, hybrids, improvisations" to get a better fit. This way, the study can also be driven by other elements apart from the methodology (p. 1719). Lochmiller and Lester (2017) also added to the discourse by stating that researchers must avoid rigidity "embrace new paths of discovery as they emerge" (p. 94) in the study.

Hesse-Biber (2017) also offered a philosophical framework for the different dimensions of qualitative inquiry. The five branches of the framework are ontology, epistemology, methodology, methods, and sources. Ontology covers three positions: Positivism where social relationships can be fashioned by discovering and testing reliable strategies, interpretive position where the social world is constantly evolving, and the critical perspective where the social world is changing but that social power is evident

and effective in shaping reality. In other words, there are multiple truths to unearth and bring to light. Epistemology can be seen through the lens of the researcher as a knowledge broker who is the authority figure in the process. In some cases, the researcher and the participants share leadership as cocreator (under the interpretive perspective) and in other cases (under the critical approach). For methodology, the plan is simply to select and discuss the rationale for executing the study, methods are the techniques and tools used to collect the data from individuals, groups, and systems. The sources are the avenues selected to bring the other perspectives to light (Hesse-Biber). See Figure 3.

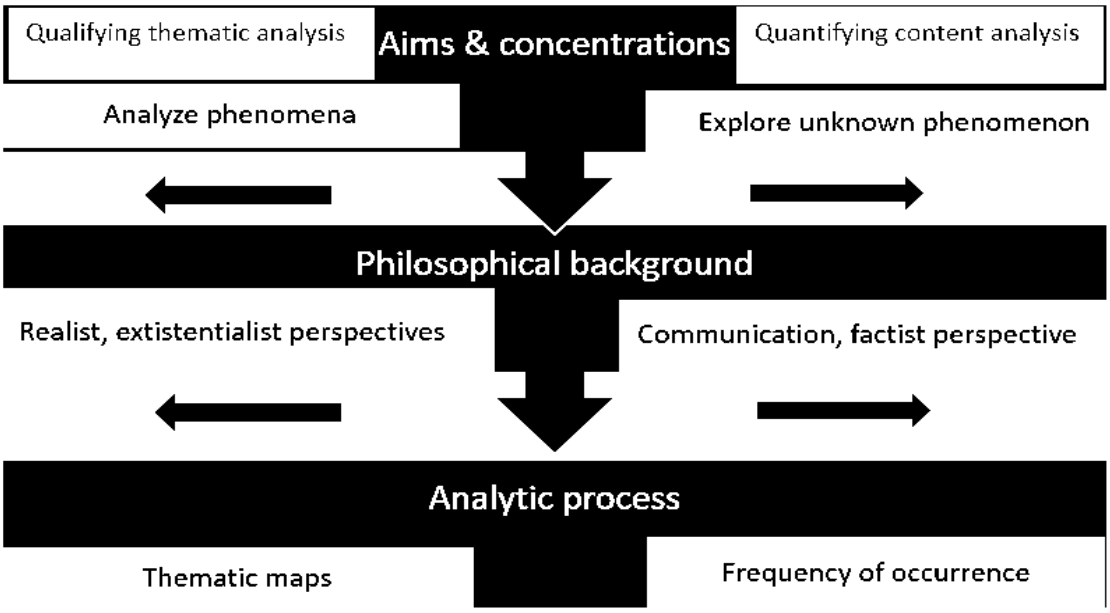

Figure 3. The Continuum of the Qualitative Methodology. Adapted from Vaismoradi, M., Turunen, H., Bondas, T. (2013, March). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences, 15*(3), 398-405. https://doi.org/10.1111/nhs.12048

Strategic of inquiry. Edmonds and Kennedy (2013) discussed four approaches contained in qualitative studies: the methodology, the type of research, the approach, and the design. Hiles (2001) extended the discussion by offering broader categories of research methodologies; Conventional, intermediate, and transpersonal approaches. The conventional methods include historical, archival, and content analysis. Intermediate

includes heuristics and feminist approaches. Transpersonal includes organic research and exceptional human experiences inquiry (Hiles). For this study the methodology is qualitative, the type of research is nonexperimental, the approach is archival oral histories, and the design is content analysis/existential including elements of heuristics and exceptional human experiences inquiry. Hiles, 2001 stated that heuristic inquiry is of greater importance when working with historical data recorded previously.

Oral history. The purpose of the oral history is to preserve historic records that may not be otherwise available (Lofgren, 2006). The U. S. Army have been collecting oral history interviews with soldiers of all ranks to "fill holes and discover information not available in unit records" (p.4) since World War II (Lofgren). The army's oral histories are used to train and motivate recruits, to reconstruct events, to supplement official records as well as preserve the history and legacy of military personnel and "" bring to life"" museum exhibits through participants' words and sounds (Lofgren, p. iv). Oral histories are also used in qualitative content analysis (Hesse-Biber, 2017) as is the aim of this study.

Oral histories collected by the military includes research on land, sea, and air forces as well as with political and military leadership, and with social and economic conditions in wartime (Lance, 1983). Lance also discussed the suitability, availability, and timing as important elements to consider when selecting informants for oral histories. Suitability refers to not only the orientation of an individual in terms of the placement/position within the phenomenon but also their memory recall and ability to respond to questions accurately (Lance). Availability refers to the situations of locating relevant informants if they survived, are willing to participate given the nature of the

topic, and if cooperation will be a factor given the organization who is doing the calling and conducting the research (Lance).

Timing can also be challenging in oral interviews. An individual may harbor differing perspectives depending on if they are in office, if they are on active duty, or if they are resigned/retired from the former position being studied (Lance). Lance opinioned that "the closeness of events heightens their importance, their sensitivity and the passion. Although this study did not select the original informants, and the passion that may be associated with them" (Lance, Para. 13). Considering these factors, it is incumbent of the interviewer to exercise judgment on whether the informant's short-term memory recall or long-term memory recall is the better option given the circumstances "when openness, detachment and objectivity are threatened" (Lance, Para 13). This study covered the three elements regarding suitability. Suitability to select informants from varying ranks, occupational specialty, and unit assignment. Oral history can provide insights not normally found in more traditional data. A skilled interviewer learns to practice impartiality, to listen, and to stay in the background of the discussion (Russell, n.d.).

Similarly, Trochim (2006) discussed unobtrusive measures that also keeps the researcher in the background and serves to avoid a change in behavioral reactions from informants like the Hawthorne Effect. The term, Hawthorne effect, is derived from the Hawthorne studies conducted in the 1920 to determine the impact on worker's productivity when certain elements in work conditions were changed (lighting, increased wages, job satisfaction). The results showed that the workers also responded the attention given to them by researchers' presence in the factory (McCarney, Warner, Iliffe, van Haselen, Griffin, & Fisher (2007).

Existential approach. Feldman (n.d.). discussed three aspects to existentialism: situatedness, self-image, and freedoms/liberties. Situatedness refers to where individuals are situated in their lives (setting and context), which is the "backdrops in front of which they act" (Para. 10) and interact with other entities and objects. Self-image is emergent and is determined by the individual's life experiences when they attend to and interpret them in their own ways including intensions and conscious and unconscious mental states (Feldman). Freedom/liberty, whether protected by constitutional law or is self-directed, can be problematic. Given an overabundance of freedoms and liberties, individuals can make bad choices to inflict harm to others (Feldman). The study incorporates elements of the informants' and other constituents' existential lives.

Archival database. Several archival databases are available for public use on the 9/11 terrorist attacks on the United States including but not limited to the U. S. government-based archives such as the Library of Congress, the National Archives, and the 9-11 Commission, academia-based archives such as ERIC, ProQuest, EBISCO, and JSTOR, and public-based archives such as LexisNexis and the New York Times. For this study, the researcher relied on a military-based archive from the National Guard Bureau, Historical Services Branch. Timescapes Archive (2019), a United Kingdom-based qualitative archive that caters to professional researchers. Timescapes is a web-based archive that "enables new and creative interpretations of preexisting data. Reuse provides a unique opportunity to study the raw materials …, and to arrive at new insights from a different historical, geographical, theoretical or substantive perspective" (Timescapes, 2019, Para. 2).

Glesne (2016) added that scholars have analyzed archival materials such as "geographic area, persons included, time span, and human activity" (p. 83) with a view to reinterpret them through different lens. This study also viewed the phenomenon from the same angles that included the where/geographic area (the WTC in New York City), the who/persons (the NYSMF), the when/time span (the past, present, and future of the 9/11 attacks on the WTC), and the what/human activity (DRP of the NYSMF). Also, Gay et al. (2009) asserted that archival data can help researchers "gain valuable historical insights, identify potential trends, and explain how thing got to be the way they are" (p. 373).

Content analysis (CA). Hesse-Biber (2017) defined content analysis as ways to identify a textual report to understand "thought patterns and assumptions" (p. 248) and what meanings are ascribed or not ascribed in the text. As a research method, CA includes both qualitative and quantitative methodologies thus making it unobtrusive in that it involves collecting data from other sources and not only human contributions (Hesse-Biber, 2017; Russell, n.d.). The former seeks to derive patterns and themes surrounding a main concept and the latter seeks to derive mathematical and statistical analysis of the text in question (Hesse-Biber).

Three types of CA. The use of CA provided a flexible method in which to unobtrusively collect data, organize the analysis, and complete the study in a coherent and effective way (Chenail, 2011; Hesse-Biber, 2017; Kohlbacher, 2006). Busch et al. (2018) and Hsieh and Shannon (2005) offered three types of qualitative CA:

Type 1. Conventional content analysis (CCA) advantage is a method that obtained *direct* information from participants (Hsieh & Shannon, 2005). CCA was applied when a

hypothesis, theories, and/or research was limited or not available and involved meticulous combing of text and data to develop themes or a hypothesis. Advantages of CCA was that it characterized with emphasis on immediate coding during the analysis and used peer debriefings, and/or follow up reviews. CCA was paramount to keeping the data in the context of the participants' voice. A disadvantage in the use of CCA was that it is often confused with other forms of qualitative data (Hsieh & Shannon).

Type 2. Directed content analysis (DCA). The DCA strategy uses theory and/or relevant research findings for its guidance in developing keywords for initial coding and to validate the theory or preliminary research findings. DCA is considered a deductive application and is a more structured process then the other strategies (Hsieh & Shannon)

Type 3. Summative content analysis (SCA). The SCA strategy also known as manifest content analysis, is an attempt to discover underlying meaning of communicated data and it was a more *quantitative* approach using word counts and frequencies (Hsieh & Shannon, 2005). During the analysis the researcher goes beyond the word count and frequency of the data and explored the meaning of words as they appeared in context of the phenomenon (Hsieh & Shannon). In this study, the researcher used a combination of the three types of CA for matching research themes discovered in the initial research and literature review, forming a hypothesis to make a statistical inference, and combing over oral histories provided by the informants to find key words that helped in the confirmation and final validation of data (Krippendorff, 2013). Coding was an important factor in CA and was discussed next. Tov, Ng, Lin, and Qiu advised that CA offers the ability to "handle large volumes of open-ended responses at greatly reduced speed without sacrificing consistency in coding" data (p. 1069).

Coding. A heuristic process, coding originates from the Greek language meaning to discover (Saldana, 2016). Coding is an interpretive process that helps transition from data collection to data analysis.; it is also a cyclical and a dynamic process that links and categorizes data to help to find meaning (Saldana). Inductive reasoning is involved in coding and helps to describe the phenomenon as complied in the study and can take the form of category label with "chunks of varying-sized words, phrases, sentences or whole paragraphs" (Basit, 2003, p. 144). As an important stage of qualitative data analysis, coding is "tedious and time consuming when carried out manually and if language software is used, it may take several weeks to get acquainted with a software package to be able to code the qualitative data electronically" (Basit, 2003, p.153).

Participants/Informants

Because this is an archival study, there are no participants in the traditional sense. The informants for this study were four evacuees interviewed after the WTC 1993 bombing attack and referred to as past informants, seven NYSMF members selected from a pool of 30 members who were interviewed in the aftermath of the 9/11 attacks on WTC and referred to as current informants, and five informants from the emergency management field interviewed recently and are referred to as future informants. The interviews are public record and sourced from the National Guard Bureau, Historical Services Branch. The interviews were conducted in four different military armories and a tent with over 30 male members. Seven of the 30 interviews available and suitable to the discourse were selected for this study. An effort was made to diversify the demographics by assumed ethnicity using the last names of the informants (Kandt & Longley, 2018). The result yielded seven informants from various ethnicities: two Asians, two Hispanics,

two Whites, and one of Jewish ethnicity. See Table 3 for the demographic characteristics of the NYSMF. The table shows the informants' pseudonym, their genders (all males), and their ethnicities.

Table 3

Demographic Characteristics of the Study's Military Sample

Informant pseudonym	Gender	*Ethnicity
CIOH 1	Male	Hispanic
CIOH 2	Male	Hispanic
CIOH 3	Male	Asian
CIOH 4	Male	White
CIOH 5	Male	Jewish
CIOH 6	Male	Asian
CIOH 7	Male	White

Note. Current/Present informant's oral history (CIOH), *assumed ethnicity based on Kandt, J., & Longley, P. A. (2018, August). Ethnicity estimation using family naming practices. *PloSOne, 13*(8), e0201774. doi:10.1371/journal.pone.0201774

Five of the informants were commissioned officers from Brigadier General to Major, two were noncommissioned officers, one command Sergeant Major, and one Specialist. The informant's military occupational specialties distribution consisted of one Commander of the taskforce, one Surgeon General of the taskforce, one Chaplain (Rabbi), One Battalion Commander, one operations officer NYNM, one Command Sergeant Major, and one Specialist Medic. No other demographic information was collected by the military interviewer as noted in the archived transcripts. In addition, the occupational characteristics of the informants were differentiated by ranks, military occupational specialty, and organic unit assignment.

Mitchell (2015) discussed the benefits of conducting secondary analysis using archived interview transcripts retrieved from a national database. Such advantage includes gaining new insights, developing themes, and generating new findings on specific, hard-to-reach and vulnerable populations without further intrusion (Medjedovic, 2012).

Purposive sampling. The purposive sampling technique aims to seek out "people, organizations, communities, cultures, events, [and] critical incidences" (Lochmiller & Lester, 2017, p. 94) that are intricately involved in the phenomenon under study. In this technique, the researcher "intentionally select individuals and sites to learn and understand the central phenomenon" (Creswell, 2015, p. 205). Center for Innovation in Research and Teaching [CIRT] (n.d.), offered several types of purposive sampling including heterogeneous and homogeneous sampling where in the former the researcher includes informants from different backgrounds/occupations to capture wide-ranging perspectives on the phenomenon, and in the latter, the researcher selects cases from informants with similar characteristics and traits such as age, gender, and race to derive information specific to those identified traits. For this study, the heterogeneous technique was used to garner perspectives from a wide array of NYSMF informants. Heyvaert, Hannes, & Onghena (2017) introduced several variations of purposive sampling strategies, four of which will be selected for discussion: Typical, homogeneous, maximum variation/heterogeneous, and deviant/extreme sampling. The aim of selecting typical sampling is to orient unfamiliar readers to the phenomenon under study. Homogenous sampling is used when there is little variation in the scope and depth of the study. Maximum variation/heterogeneous

sampling is used in cases where the phenomenon impacts "diverse stakeholders among various contexts to facilitate informed global decision making" (Heyvaert et al., p. 77). The final option is deviant/extreme sampling to "learn from highly unusual manifestation of the phenomenon" under study including "outstanding successes and notable failures" (Heyvaert et al., p. 77). Seven of the 30 archival interviews by the informants were purposely selected to ensure the embodiments of perspectives from different ranks/roles for deeper meaning. The informants were selected based on differentiated ranks, military occupational specialty, and unit assigned. See Table 4 for a listing of the occupational characteristics of the military sample.

Table 4

Occupational Characteristics of the Study's Military Sample

Informant pseudonym	Rank	Military occupational specialty	Organic unit assignment
CIOH 1	Specialist	Medic	1st Battalion, 69th Infantry
CIOH 2	Command Sergeant Major	Special action officer	1st Battalion, 69th Infantry
CIOH 3	Major	Assistant operations officer	42nd Infantry Division Mechanized
CIOH 4	Major	Special Project officer	NYNM
CIOH 5	Colonel	Chaplain	STARC
CIOH 6	Brigadier General	Surgeon General	1st Battalion, 101st Infantry
CIOH 7	Brigadier General	Task force commander	53rd Troop command

Note. CIOH = Current informants' oral history, NYNM = NY State Naval Militia, STARC = State Area Command.

In addition, a process of ethnic estimation was employed to ascribe last names to ethnic categories (Kandt & Longley, 2018). Kandt and Longley (2018) advised that several matching tools – Onomap, Nan Pechan, and OriginsInfo - are available to classify last/surnames based on ethnicity including but not limited to White (British or Irish),

Black (American or Caribbean), Indian, Chinese, mixed, and other categories. The classifications were developed based on cultural differences, social naming practices, secularism, or religion. Forenames, on the other hand, are ascribed not only on ethnicity but also on gender. Although surnames are assigned from generation to generation in the immigrant population, there is now an ethnic mix stemming from integration and mixed marriages/relationships (Kandt & Longley, 2018).

The setting. Hesse-Biber (2017) stated that the setting is the "physical location and time in which narrative events take place" (p. 268). The original setting used for the interviews was in the vicinity of Ground Zero where most the interviews took place. Only one interview was conducted at an-out-of-the-area site.

Data Collection Tools

Because this is an archival study, no data collection tools were used. Hesse-Biber (2017) stated that advantages of archival records are their stableness, unobtrusiveness, and broad coverage area. On the other hand, disadvantages are that they can be biased both from the perspectives of the informants and those selected for interviewing. Also, discovering the data can be difficult. On the part of the informants' observation of events, the strength lies in the reality – "covers events in real time" and can tap "into interpersonal behavior and motives" (Hesse-Biber, p. 223) and the weaknesses lies in the observation of the informants and what changes in perspectives that may emerge from such observation. Because this is a public archival study, the need for creating/sourcing an interview protocol, getting permission to use, and/or seeking validation by a group of experts were negated.

However, to facilitate the data analysis process, a systemic review of the data was conducted to develop evidence and gap maps (EGM) for a prespecified protocol using the include/exclude criteria relative to the life existential perspective of the past, present, and future aspects of the study (Campbell Collaboration, n.d.). The *included* criteria contain information on the target population including demographic, academic, occupational, and professional characteristics. The *exclude* criteria, on the other hand, is not the opposite of inclusion but characteristics of the target population that presents with additional characteristics conflict with the study's aims. Inclusion and exclusion error can affect the validity and reliability of the study if variables that do not relate to the study are selected and if the same variable is used to exclude another category of participants such as including males and excluding females (Patino & Carvalho Ferreira, 2018).

The Centre for Reviews and Dissemination (n.d.) added that by specifying the include/exclude criteria beforehand helps in the reduction of bias by selecting studies, including participants, identifying research evidence, and preempting the data extraction process. A similar approach is to use a table of specifications to assist in validating the research questions. The table of specifications shows how the researcher was intentional in aligning the research questions with the interview questions after reading the interviews and preanalyzing first impressions to gather concepts for the table of specification and develop them into categories/domains (Elliott & Timulak, 2015). See Table 5 for a summary of the include/exclude criteria. The simulated protocol for content analysis, using the EGM formula, created for this study included historical data, archival interview questions, and current narrative on the 9/11 DRP. See Appendix B for the simulated protocol for content analysis.

Table 5

Table of Specifications With Include/Exclude Criteria

Include	Exclude
Focus only the four survivors' archival interviews cited in the study	Other survivors' interviews sourced
Center for Military History, National Guard Bureau Archives and public based archives	Academia-based based archives
Focus only on open ended, semistructured NYSMF interviews cited	Other open ended, semistructured public interviews sourced
Heterogeneous sample from different ranks, occupational specialty, and unit assignments	Homogeneous sample (except for the all-male informants).
Focus on NYSMF as first responders as informants	Other important first responders (FDNY, NYPD, PAPD, and EMS) as informants
Focus only on EMS' archival interviews cited in the study	Other EMS's interviews sourced

Note. EMS= Emergency Medical Services, FDNY = Fire Department of New York City, NYPD = New York City Police Department, NYSMF = New York State Military Forces, and PAPD = Port Authority Police Department.

Open-ended and semi-structured interviews. Hawkins (2018) stated that semistructured or structured interviews "…are the most common method of data collection in qualitative research" (p. 493). Leech (2002) added that the best type of semistructured question is the grand tour questions of which there are two types. The first seeks to extract verbal tour from the participant on a topic with which they are very familiar such as a typical day at work. The second type is the specific grand tour question that seeks to elicit information on a specific day, event, or topic. Fox, Edwards, and Wilkes (2010) added that there are four types of grand tour questions: Typical, specific, guided, and task related. A typical question in this format would be inquiring about what the informants' organization's response is to an issue (Leech) would be. A specific question might be a certain type of event. A guided question may be related to an actual tour of the surroundings. Finally, a task related question may require the interviewee to

reconstruct a task that he or he normally performs. The archival interviews to be used in this study were based on an open-ended and a semistructured format as derived from National Guard Bureau, Historical Service Branch.

Procedures

The study was initiated with (RQ1), audio recordings transcribed using one of several (Express Scribe, Audio Notetaker 3, InqScribe 2.2.1, and F4/F5) offered by Lochmiller and Lester (2017). For this study, Express Scribe transcription software tool was used where applicable for RQ1 audio recordings on the 1993 bombing attack at WTC sourced online. Express Scribe is published by NCH Software and is downloadable for free (NCH Software, n.d.). Second, the researcher subscribed and procured the LIWC software package for students. Lin, Lin, Wen, and Chu (2016) stated that LIWC is very applicable to "operationalize aspects of cognitive processing and perceptual orientations" (p. 2), which will be pursued in this study.

The raw data, in the form of the NYSMF interviews, were converted into Microsoft's (MS) Word 2007 file format, edited to remove nondictionary words and terms, and were then uploaded in the LIWC dictionary for analysis. The results of the initial analysis were completed, the researcher downloaded/ extracted the outputted texts into single text files. The output variables were expressed as percentage of total words. Files were then saved, and a secondary analysis was conducted covering word counting conventions (raw word counts, number of words in a sentence, words with six letters or more, and dictionary words) weighing language for analytical thinking (formal hierarchical patterns), clout (social status and confidence), authenticity (straightforward versus hedging), and emotional tonality (positive versus negative usage) (Pennebaker,

Booth, Boyd, & Francis, 2015a; Pennebaker et al., 2015b; Tausczik & Pennebaker, 2009). Next, the linguistic dimensions including functionality of words, parts of speech (verbs, pronouns, adverbs, adjectives, propositions, and conjunctions; articles and negations), and grammar including comparisons (good, better, best), interrogatives (who, what, where, why, when, how), numbers (first, hundred), and quantifiers (few, many, less) (Pennebaker et al., 2015a; Pennebaker et al., 2015b; Tausczik & Pennebaker, 2009). The final LIWC analysis was derived from the 10 psychological processes segment that measures affective processes (anxiety, anger, sadness), social processes (family, friends, female/male references), cognitive processes (causation, discrepancies, tentativeness/certainty), perceptual processes (see, hear, feel), and biological processes (body, health, sexual, ingestion) (Pennebaker et al., 2015a; Pennebaker et al., 2015b; Tausczik & Pennebaker). The psychological processes also include drives (affiliation, achievements, power, reward, risk), time orientation (past, present, future focus), relativity (motion, space), personal concerns (work, leisure, home, money, religion, death), and informal language (swearing, netspeak/internet shortcuts, assent – yes/ok, nonfluencies - umm/er, and fillers – I mean/ you know) (Pennebaker et al., 2015a; Pennebaker et al., 2015b; Tausczik & Pennebaker; Lin et al., 2016). See Appendix C for a listing of LIWC domains/variables with alpha coefficients.

The files were then analyzed individually for context relating to the phenomenon under study. Hai-Jew (2016/2017) stated that more complex outputs from LIWC can also be exported to Microsoft Excel files, if quantitative analysis is desired, using SPSS – Statistical Package for Social Sciences or other such software packages. Once access was

ascertained, the seven interviews were edited and converted to Microsoft Word files. The procedural steps began two weeks following the IRB approval.

Procedural steps. Elliott and Timulak (2015) discussed the preparation of qualitative data for analysis. The process was initiated by transcribing the data (where applicable for RQ 1) and combining the informants' voice from interviews with the researcher's voice from field notes as a 9/11 DRP participant. Care was taken not to confuse the two perspectives. After transcribing the data, a step only used for the RQ1 online interviews, the researcher engaged in a first reading to gain insights and understanding of all three interview sets. Next, this preanalysis helped the researcher to determine the future direction for the study as "first relevancies start to unfold" (Elliott & Timulak, p. 153). The procedural steps for this study were designed to follow in a day-by-day, week-by-week format on how the data was prepared for uploading into the LIWC software. Because the transcription step was mostly eliminated with the use of archival interview data, the process included converting the data into specific Microsoft Word documents for the uploading into the LIWC software.

Week 1, Day 1. The data for the PIOH informants were uploaded in LIWC database and the output collected.

Week 1, Day 2. The data for the CIOH informants were uploaded in LIWC database and the output collected.

Week 1, Day 3. Continued uploading data for CIOH informants in LIWC database and the output collected.

Week 1, Day 4. Continued uploading data for CIOH informants in LIWC database and the output collected.

Week 2, Day 1. Continued uploading data for CIOH informants in LIWC database and the output collected.

Week 2, Day 2. Continued uploading data for CIOH informants in LIWC and the output collected.

Week 2, Day 3. The collective data for CIOH1-7 informants were uploaded LIWC and the output collected for the entire group to gain insights into the overall perspectives of the NYSMF. The full group perspective was necessary due to the extensive amount of data contained in the interviews as compared with the other two informant groups.

Week 2, Day 4. The data for FIOH informants were uploaded LIWC and the output collected. See Table 6.

Table 6

Data Preparation Activity Plan and Sequence

Day/week	Preparation activity plan
Day 1/Week 1	Uploaded PIOH data in LIWC DB to receive LIWC output
Day 2/Week 1	Upload CIOH data in LIWC DB to receive LIWC output
Day 3/Week 1	Continued uploading CIOH data in LIWC DB to receive LIWC output
Day 4/Week 1	Continued uploading CIOH data in LIWC DB to receive LIWC output
Day 1/Week 2	Continued uploading CIOH data in LIWC DB to receive LIWC output
Day 2/Week 2	Continued uploading CIOH data in LIWC DB to receive LIWC output
Day 3/Week 2	Uploaded CIOH1-7 data in LIWC DB to receive LIWC collective output
Day 4/Week 2	Uploaded FIOH data in LIWC DB to receive LIWC output

Note. CIOH = current informant oral history, DB = database, FIOH = future informant oral history, LIWC = Linguistic Inquiry Word Count, PIOH = past informant oral history.

Study data was also uploaded into the NVivo software to help develop themes from the interviews and into the SPSS software for minimum quantitative analysis as required by CA analysis.

Data Analysis

Taylor-Powell and Renner (2003) offered four steps to be utilized in the data analysis process. First, the researcher should become familiar with the data collected and second, focus on what should be drawn from the data question by question and case by case. The third step involves categorizing the data by identifying themes and organizing them into emergent categories. The fourth and final step is to connect the dots and bring it all together by interpreting what it means in terms of significance to the study (Taylor-Powell & Renner).

Armed with the LIWC output, the researcher conducted data analysis procedures including the psychological meaning of the informants' words beginning with raw word counts and frequencies, capture rate, and transparency to the emotionality, functionality, and tonality of their words, as well as their thinking styles, individuality, and social relationships (Pennebaker et al., 2015a; Tausczik & Pennebaker, 2010). Hesse-Biber (2017) stated that CA software packages can assist with counting frequencies, sourcing sequences, and finding locations of words and phrases to aid in the data analysis of text files.

Bulkeley and Graves (2018) opined that LIWC is used to analyze dreams and has the capacity to detect the number of language categories such as a "focus on the past, first –person, singular words, personal pronouns, authenticity…" (p. 1). The capability of LIWC enables better understanding of textual data (Bulkeley & Graves, 2018). The frequency and the intensity of the coding contributed to the understanding of the informants and in general to the analysis of the qualitative data. Basit (2003) stated that to gain a deeper understanding of the data, categories, assumptions, and relationships must

be analyzed. Erlingsson and Brysiewicz (2017), theme development procedures for transcripts or text files is a continuous process that requires flexibility and vigilance. Erlingsonn and Brysiewicz believed the data and theme linkage requires an openness and anticipation of finding new perspectives.

According to the CIRT (n.d.), the data analysis and interpretation process would take several forms: narrative analysis, discourse analysis, conversation analysis, or content analysis. Narrative analysis is a qualitative method that uses texts, stories and other life experiences focusing on the common features. Discourse analysis is analysis written in natural or vocal language and detects coherent sequences. Conversation analysis is an approach used to study social relationships, including verbal and nonverbal situations where participants take turns to discuss the topic and is like a focus group discussion. Content analysis is a research method that replicates and makes valid inferences by coding textual data and that was analyzed descriptively or interpretively (CIRT). For this study, data analysis using CA was used due to its concern with numerical descriptions of the texts as well as providing visuals of content communication using only the psychological processes data (Hesse-Biber, 2017).

Hypotheses testing (HT). HT uses statistics to determine if the current premise, known as the null hypothesis, test if there is any statistically significant difference between two or more variables in the sample data that was based on chance observations. The alternate hypotheses, also known as the researcher's gut feelings, statistically test if the sample data was influenced by a nonrandom cause. The researcher will either reject the null hypothesis, which is to accept the alternative or fail to reject the null hypothesis, which is to deny the alternative hypothesis (Legare, 2012). The null hypothesis for this

study (H_0) or the status quo is defined as: The means for past, present, and the future informants are equal. The formula states that μ_1(past informants) = μ_2(present informants) = μ_3(future informants).

The alternate hypothesis for the study (H_a) or the LIWC intervention states that: The means for past, present, and the future informants are not equal. The formula states that H_a: μ_1(past informants) ≠ μ_2(present informants) ≠ μ_3(future informants).

Data analysis activity plan. In the third week, data analysis activities began with a concentration on the 10 psychological processes for the four past informant's archival audio recordings used in RQ 1, the seven informants' archival interviews used in RQ 2, and the five informants' archival interviews used in RQ 3. Between Day 1 to Day 4 of Week 3, data analysis was conducted on the first two elements, affective and social, of the 10 psychological processes for all informants. Next, between Day 1 and Day 4 of Week 4, the data analysis focused on the next two elements, cognitive and perceptual, of the 10 psychological processes for all informants. Between Day 1 and Day 4 of Week 5 data analysis covered the next two elements, biological and drives, of the 10 psychological processes for all informants. Penultimately, on Day 1 to Day 4 of Week 6, data analysis concentrated on the two elements, time and relativity, of the 10 psychological processes for all informants. Finally, between Day 1 and Day 4 of Week 7, data analysis encompassed the last two elements, personal concerns and informal/spoken language, of the 10 psychological processes for all informants. Additional thematic data analysis from the NVivo software revealed several themes stemming from frequently used words. Quantitative data analysis, a feature of CA, was minimally employed to

determine the outcome of inferential statistics. See Table 7 for a summary of the activity plan and sequence relating to the three sets of informants.

Table 7

Data Analysis Activity Plan and Sequence

Day/week	Activity Plan and sequence
Day 1-4/Week 3	LIWC DB output analysis on the affective processes and social processes
Day 1-4/Week 4	LIWC DB output analysis on cognitive processes and perceptual processes
Day 1-4/Week 5	LIWC DB output analysis on biological processes and drives
Day 1-4/Week 6	LIWC DB output on time orientation and relativity
Day 1-4/Week 7	LIWC DB output on personal concerns and informal/spoken language

Note. LIWC = Linguistic Inquiry Word Count, DB = database.

Ethical Considerations

The ethical considerations section described how ethics was maintained in the study to preserve anonymity through deidentified and protection of confidentiality. Trustworthiness, triangulation, potential researcher bias, and reflexivity were discussed in this section. Additionally, the data is required to be stored in a password protected file for three years.

Trustworthiness. Hesse-Biber (2017) offered four research strategies for gaining trustworthiness when studying cases: confirmability, dependability, credibility, and transferability. In confirmability, the tactic is to use multiple sources of evidence, establish a chain of evidence, and identify key concepts. In establishing dependability, a key tactic to use is to develop a database with a complete set of data that others can review. For credibility, tactics include engaging in pattern-matching (search for patterns in the data and across cases), explanation-building (analyzing detailed experiences of the

informants) and including negative cases – case that are contrary to popular thinking "to test that argument and refine it" (Hesse-Biber, 2017, p. 227). The researcher managed potential bias by bracketing and employing reflexivity thereby consciously maintaining a mindset of objectivity. By including these aspects in the study, the researcher ensured trustworthiness and ethical standards adhered to throughout the process.

Gadamar (2004, 2008) and Heidgegger (1962) agreed that humans have a propensity for the interpreting of life events, which stems from experiencing life itself and the many prejudices collected along the way termed "fore-projections" (as cited in Manton, 2019, p. 2154). These projections are not subject to bracketing or suspending one's innate feelings on the topic being studied with the intention of capturing accurate informants' voice. Manton (2019) offered three ways in which researchers can avoid the pitfalls of prejudices or predisposition when coding and analyzing collected data through self-reflectivity and memo writing. First, one should respond to their "gut-feelings" (Manton, 2019, p. 2158) by listening to one's intuition, clues, and warning signs. Next, be aware by catching one's self – watching for triggers and being open-minded to one's thoughts and feelings and avoid being too cued into what the audience may want to see reported. Finally, be open to different interpretations when developing themes and categories and not be afraid to incorporate visualizations when coding and categorizing data and chose the best option that depicts the situation at hand. The best outcome will be derived from flexibility in thought rather than rigidity in action. The purpose of engaging in such "self-indulgent" behaviors (Manton, p. 2159) to (i.e. ad-nauseum) is not to bring focus on the researchers' inner feelings or prejudices but instead to "illuminate the data" (Manton, p. 2159) and report accurate findings.

Triangulation. Creswell (2015) reported that triangulation is a method used by researchers to validate findings and determine the "accuracy and credibility" (p. 258) of the study. Triangulation is a means of using different methods of examining a single phenomenon to increase the complementary strengths of validity across components (Begley, 1996a, 1996b; Creswell, 2012: Gay et al., 2009; Heyvaert, Hannes, & Onghena, 2017; Johnson & Christensen, 2014; Teddlie & Tashakkori, 2009). By triangulating data, it also offsets biases in the phenomenon under study and increases the validity of the results (Teddlie & Tashakkori, 2009). According to Creswell (2012), triangulation, requires researchers to gather evidence from multiple sources including individuals (participants/informants), data, and processes. Johnson and Christensen (2014) added four more "cross-checking" (p. 299) points: multiple investigators, methods, sources, and/or theoretical perspectives to the triangulation formula. Triangulation was employed in this study to demonstrate evidence using personal communication on the phenomenon as cited in Chapter 1 and of the informants' perspectives based on the archival interviews (individuals), evidence of the status of the military demographically, from the literature review, and from the forthcoming results (data, sources, theoretical perspectives), and evidence from the recorded images of the disaster in different states of development (processes).

Potential researcher bias. Researchers can engage in several processes to help maintain a mindset that prevents actions that may lead to bias including reflectivity and bracketing (Gay et al., 2009; Gearing, 2004; Hesse-Biber, 2017; Johnson & Christensen, 2014; Tufford & Newman, 2010). Hesse-Biber (2017) offered tips for student researchers on being aware of the impact of reflexivity under the social conditions – "the social

location and the social biography" (p. 45) of the researcher. Student researcher should inquire of themselves about their own biases that they bring to the research table, how their own values and belief influence the study, how their own attitudes and position on the topic area will impact how they gather, analyze, and interpret the data, and if they have checks and balances against any of their own agenda that may shape the results (Hesse-Biber, 2017). Finally, Hesse-Biber recommended that student researchers keep a research journal to reflect on their actions as they journey through the process and Johnson and Christensen (2014) added that such reflective action should be considered in the data collection and data analysis as the researcher tries to understand and gather meaning for the study.

Johnson and Christensen (2014) stated that reflexivity is conducted by the researcher to maintain a mindset that prevents actions that may lead to bias from predispositions. By employing reflexivity, the researcher consciously maintained a mindset of objectivity and avert the tendency to engage in potential bias actions. Tufford and Newman (2010) stated that the process of bracketing means that the researcher *brackets* or suspends his or her own knowledge, beliefs, values, and biases and instead focuses on the informants' accounts of the phenomenon understudy. Gearing (2004) added bracketing can occur in two forms (dichotomous): Internal and external. Internal bracketing centers on suppositions based on the researcher's knowledge and experience. The phenomenon being studied, and external bracketing focuses on the phenomenon itself in terms of historical facts and environmental factors. Triangulation formula, reflexivity, and bracketing strategies was utilized in this study to ensure that trustworthiness and ethical standards were adhered to throughout the process.

Chapter 4: Findings

Background of the Study

The focus of the study was to explore the impact of terrorist's attacks on the World Trade Center and the preparedness of disaster response by survivors of the 1993 attacks and by the New York State Military Forces in the aftermath of the September 11, 2001attacks. The study also explored the ensuing incident stress and the physical effects of working in a toxic environment as well as the future of DRP (Fanning & Goldenberg, 2001; 911 Memorial, 2019; National Guard, 2011; & Reynolds, 2014). The study was framed around the lived past featuring the WTC attack in 1993, the experienced present (defined as such for this study) featuring the 9/11 WTC attacks, and on the anticipated and imagined future, which is based on lessons learned since the attacks. The findings were developed from historical data and from archival interviews with informants from past (pre9/11), current (9/11), and future (post9/11). Using a combination of existential and heuristic framework as well LIWC and content and statistical analysis, the informants' stories were uncovered, and themes derived from all three informant groups (Hiles, 2001). Hiles also stated that heuristic inquiry is of greater importance when working with historical data recorded previously.

LWIC (2015) program used an enhanced dictionary to help analyze language files from the words of the informants producing 93 variables. The program provided insights into five major categories or domains: word counts, language variables, linguistic dimensions, other grammar, and psychological processes with 10 subscales (Pennebaker et al., 2015). The focus of this study was on the 10 psychological subscales only. The purpose of this approach is to determine the effects/perspectives of the terrorist attacks on

the informants, particularly the NYSMF, and to understand how DRP was handled not only in the aftermath of the attacks but also in planning for the future. By focusing on the psychological processes, the study delved into an understanding of human behavior including emotions such as anxiety, anger, cognition, and perception as well as drives, communication, and speech patterns of the informants. Pennebaker et al. (2015) created LIWC not only to recorded and reported group data but designed the program to also target the individual's reality and experience. Appendix C shows the 93 variables or subscales derived from the five domains identified in the LIWC (2015) database program.

LIWC domain codebook. Coding used for the informants were PIOH for the group classified as *past* informants, CIOH for the group classified as *present* informants, and FIOH for the group classified as *future* informants. The psychological domains are coded as follows: The code, PP1APD, indicates the affective processes domain, which incorporates positive emotion, negative emotion, anxiety, anger, and sadness. The code, PP2SPD, designates the social processes, which includes associations with family, friends, human, female references, and human references. The code, PP3CPD, indicates the cognitive processes domain, which refers to insight, causation, discrepancy, tentative, certainty, and differentiation. The code, PP4PD, represents the perceptual processes domain, which correlates to the senses: see, hear, and feel. The code, PP5BPD, signifies the biological processes domain, which covers the body, health, and sexual feelings. The code, PP6DD, for the drives' domain, which is associated with affiliation, achievement, power, reward, and risk. The code, PP7TOD, expresses the time orientation domain; which includes a past focus, a present focus, and a future focus. The code, PP8RD, for

the relativity domain, which incorporates motion, space, and time orientations. The code, PP9PCD, represents the personal concerns domain, which is related to work, leisure, home, money, religion, and death. Finally, the code, PP10ILD, denotes the informal language domain, which consists of swear words, internet speak, assent, nonfluencies, and slang language (Pennebaker et al., 2015). Table 8 displays a listing of the codes used for the ten psychological processes domains.

Table 8

Codes for Psychological Processes Domains

Name of domain	Domain code
Affective domain	PP1APD
Social domain	PP2SPD
Cognitive processes domain	PP3CPD
Perceptive processes domain	PP4PPD
Biological processes domain	PP5BPD
Drives domain	PP6DD
Time orientations domain	PP7TOD
Relativity domain	PP8RD
Personal concerns domain	PP9PCD
Informal spoken language domain	PP10ILD

Note. PP1APD = affective processes domain, PP2SPD = social processes domain, PP3CPD = cognitive processes domain, PP4PD = perceptual processes domain, PP5BPD = biological processes domain, PP6DD = drives domain, PP7TOD = time orientation domain; PP8RD = relativity domain, PP9PCD = personal concerns domain, and PP10ILD = informal language domain.

Research questions. The overarching central question being explored is: What meaning do the 1993 bombing and the 9/11 terrorist attacks on the WTC have on the

past, present, and future informants in respect to disaster response preparedness? The subquestions are as follows:

Research Question 1. What were the 1993 WTC bombing *past* informants' experiences with disaster response preparedness as survivors? The evidence was sourced from (a) historical data, (b) four *archival* interviews conducted pre9/11, and (c) LIWC psychological processes using content analysis.

The subquestions were: Who were the attackers? Where were they from? Where and when did the attack take place? Who were the first responders? What missteps occurred? What lessons were learned? What actions were taken and why?

Research Question 2. What were the NYSMF *current* informants' lived experiences dealing disaster response preparedness at the WTC on 9/11 and what were the effects of the toxic environment at Ground Zero, and the health concerns that surfaced? The evidence was sourced from (a) seven *archival* interviews conducted on 9/11 and the subsequent weeks following the attacks, (b) historical data, and (c) the LIWC psychological processes using content analysis.

The subquestions were: Who were the attackers? Where were they from? Where and when did the attack take place? Who were the first responders? What missteps occurred with NYSMF? What were their first impressions of Ground Zero? How did the communication channels work? Were the channels opened and functional? What was the technological impact? What toxic environment/health concerns surfaced?

Research Question 3. What were the EMS *future* informants' perspectives, post9/11, on disaster response preparedness? The evidence was sourced (a) from five *archival* interviews with emergency management services (EMS) personnel, (b) from

historical and current data on what disaster response preparedness changes have been implemented since the 9/11 attacks that impact not only the NYSMF but also the wider community, and (c) from the LIWC psychological processes using content analysis.

The subquestions were: What changes have since been implemented in response to the 9/11 terrorist attacks that impact not only the NYSMF but also the wider community? What reports were commissioned and by whom? What laws were passed? Why and where were the wars started? How have health concerns been treated? What lessons were learned? What honors were bestowed on the NYSMF personnel who served during the 9/11 WTC attacks?

Analysis of Research Question 1

The research question asked: What were the 1993 WTC bombing *past* informants' experiences with disaster response preparedness as survivors? The evidence was sourced from (a) historical data, (b) four *archival* interviews conducted pre9/11, and (c) LIWC psychological processes using content analysis.

The subquestions were: Who were the attackers? Where were they from? Where and when did the attack take place? Who were the first responders? What missteps occurred? What lessons were learned? What actions were taken and why?

Historical data analysis. The attackers were Ramzi Yousef, Mahmud Abouhalima, Ahmen Ajaj Ismail, and Afdal Rahman Yasin from Yemen. All were Jihadists, associated with "al Qaeda" (Stewart, 2015). The attack on the WTC occurred on February 26, 1993 with a 1,500-pound truck bomb. The detonation was in the garage of the North Tower of the WTC complex. WTC covered 16 acres of land with seven buildings that included both the North and South Towers. The bomb killed six people in

the garage and wounded another 1,042 (USFA, 1993). The bombing exposed the vulnerabilities of WTC and the NYC DRP (The 9/11 Commission Report, 2004). According to USFA (1993), the first responders, NYPD, FDNY, and other NYC agencies immediately responded to the scene but were focused on the WTC garage; attending to the fire, negotiating the debris, and searching for victims and survivors. Before the 1993 bombing, there were no drills or designated guides to help evacuate the WTC (USFA, 1993).

Past informants' profile. All informants were in the North Tower offices at the WTC building at the time of the 1993 terrorist attack**.** The first informant is PIOH1, is a female who worked for Morgan Stanley; PIOH2 is a male and the building manager, PIOH3 is a male and the executive director, and PIOH4 is a male and the director of fire safety (911 Memorial, 2019). See Table 9 for the past informants' profile chart.

Table 9

Past Informants' Profile Chart

Informant pseudonym	Occupation	Gender	Location at time of attacks
PIOH1	Executive, Morgan Stanley	Female	45th floor, North Tower
PIOH2	Building manager, WTC	Male	WTC offices
PIOH3	Executive director WTC	Male	North Tower
PIOH4	Director of fire safety, WTC	Male	WTC offices

Note. PIOH = past informant oral history, WTC = World Trade Center.

Thematic analysis for past informants. Three major themes emerged from the past informants' archival interviews: chaos and confusion, lack of DRP interaction, and leadership. Leadership was also divided two subthemes: initiative and resilience.

Theme 1 chaos and confusion. Three of the past informants experienced the movement in the building and immediately knew that something was amiss. When PIOH1 received a telephone call from a family member who confirmed that the building was being evacuated, PIOH1 immediately left the building and took her staff members along. Conducting a meeting when the building rocked, lights, and telephones were no longer in service PIOH3 opened the office door and witnessed a mass of people moving down the stairwell but decided to remain in the office and continue the meeting. Witnessing the tentative movement of people through the dark and smoke-filled corridors of the North Tower PIOH4 moved quickly to the ground floor to procure penlights to provide light to people massed on the stairwells. The penlights helped to expedite the evacuation of the building.

Theme 2 lack of DRP interaction. The lack of emergency preparation and no first responder assistance was a failure by the responders to anticipate and to plan for the truck bomb attack during the 1993 bombing of WTC. No PIOH reported any form of support from first responders. Making a judgement call, PIOH1 ordered colleagues to evacuate. Acting on initiative and without guidance PIOH4 moved to the ground floor. Dismissing the confusion PIOH3 chose to remain in the North Tower.

Theme 3 leadership. Once alerted to the danger, PIOH1 ordered the personnel in the office to evacuate and, leading by example, initiated the evacuation of personnel down the 45 floors of smoke engulfed stairwell. Selfless and without hesitation PIOH4 rushed to help expedite the evacuation.

Subtheme 3.1 initiative and resourcefulness. In pitch black corridors, PIOH1 and a colleague, adapted a procedure to negotiate the dark corridors and stairwells to

evacuate. Counting the steps out loud PIOH1 and colleague placed a hand on the wall to maintain balance. Looking to assist in the evacuation, PIOH4 foraged to find a resource to help to provide light. Continuing to use her initiative, PIOH1 found safe haven for a group of colleagues to decompress and arrange for transportation home. When PIOH1 called home to inform family that she arrived safely at the PATH Station in N.J. "…but heard the words terrorists that it was a bomb. My knees…my legs just went out completed from underneath me and I just collapsed on the PATH station." Having the presence of mind PIOH4 demonstrated resourcefulness to provide light to help expedite the. Evacuation of the North Tower.

Subtheme 3.2 confidence and resilience. PIOH3 emanated a high level of confidence in the structure of the WTC buildings based on his historical involvement in the construction of WTC. PIOH 2, an engineer who was resident in the North Tower, was hoping by the end of the day to see the lights restored "…as the right message is resilience." The lights were restored in the early evening following the 1993 bombing (PIOH2).

LIWC psychological analysis for past informants. For the Past informants, the highest mean average (with standard deviation in parenthesis) was for relativity at 9.19 (.87), followed by time orientation at 4.64 (.31), and social and drive third at 2.62 each with (.36) and (.77) respectfully. PIOH4 was the only past informant that matched or exceeded the LIWC mean in the cognitive process domain. This might explain PIOH4's deliberate action to collect the penlights as it was an extemporaneous solution to help facilitate the evacuation. The PP7PPD domain showed all four participants exceeding the LIWC mean of 2.40. PIOH1 had a mean average of 4.15, PIOH2 scored 3.91, PIOH3

scored 4.15, and PIOH4 scored the highest mean of 5.56. In PP7TOD domain, the informants frequently displayed a penchant for time orientation processing in respect to the things in past focus. The subscale of focus past showed that all four informants again exceeded the LIWC mean of 4.64 with scores of 7.92, 7.26, 7.92, and 9.93 respectively. The high scores in this domain may have significance to the interviews that were conducted 16 years after the 1993 bombing experienced by the informants. The Drive domain, PP6DD, had all past informants exceeding the LIWC mean of 2.62. Leadership was a theme harvested from the interviews and may explain the reason for strong drives. Earlier in PIOH3's interview, he spoke of his expedited commute and arriving earlier than expected. In fact, if PIOH3 arrived eight minutes later he would have been in the North Tower Garage when the bomb detonated and killed six people who were in the garage (The 9/11 Commission Report, 2004). This may explain PIOH3's euphoric and high Drive domain scored by LIWC. In addition, significant results in relativity, coded as PP8RD, were highlighted by all four informants. This may be due to the bombing at the Past informants' place of work, which created synergy in direction and thought.

Content and statistical analysis for past informants. Descriptive statistics is a method in which to describe sample data so no generalizations can be made about the population from which the sample is drawn (Kaliydan & Kulkani, 2019). The mean and standard deviation are used to help to describe the sample. The mean is the simple interpretation to measure the frequency of distribution for the sample and the standard deviation is the measurement of the range the data is spread within the sample (Kaliydan & Kulkani, 2019).

Descriptive statistics. The means and standard deviations were conducted 10 psychological processes using the Statistical Package for the Social Sciences (SPSS). The mean for the affective processes with standard deviation in parenthesis was rounded off from .9950 in table below 1.00 (.30). A comparative analysis between the past informants' cognitive process domain mean of .24 (.74) was significantly less than the LIWC mean of 10.61 (3.02). The past informants' informal language domain showed the no difference with a mean of 2.52 (1.6), which equaled the LIWC mean of 2.52 (1.65). See Table 10 for a comparison between the past informants' psychological processes domains and LIWC means.

Table 10

Comparison of Past Informants' Psychological Domains (n=4)

	Past informants		LIWC	
Domains	Mean	Standard deviation	Mean	Standard deviation
PP1APD	.99	.30	5.57	1.99
PP2SPD	2.61	.36	9.74	3.98
PP3CPD	.24	.74	10.61	3.02
PP4PPD	2.25	.29	2.70	1.20
PP5BPD	.15	.19	2.03	1.39
PP6DD	2.62	.77	6.93	2.03
PP7TOD	4.63	.30	__	__
PP8RD	9.18	.87	14.26	3.18
PP9PCD	1.40	.27	__	__
PP10IOD	2.52	1.65	2.52	1.65

Note. PP1APD = affective processes domain, PP2SPD = social processes domain, PP3CPD = cognitive processes domain, PP4PD = perceptual processes domain, PP5BPD = biological processes domain, PP6DD = drives domain, PP7TOD = time orientation domain; PP8RD = relativity domain, PP9PCD = personal concerns domain, and PP10ILD = informal language domain.

Inferential statistics. A one-way within subject's ANOVA was conducted to compare the effects of LIWC psychological processes (IV or treatment variable) on 9/11 informants' scores (DV or outcome variable). The result showed that the null hypothesis was not rejected at the .05 level of significance. There were no significant differences between the three groups of informants (past, present, and future) as determined by a one-way ANOVA [F (2,33) = .08, p = .982]. See Appendix E for a visual depiction of the ANOVA results.

Analysis of Research Question 2

The research question asked: What were the NYSMF *current* informants' lived experiences dealing disaster response preparedness at the WTC on 9/11 and what were the effects of the toxic environment at GZ, and the health concerns that surfaced? The evidence was sourced from (a) seven *archival* interviews conducted on 9/11 and the subsequent weeks following the attacks, (b) historical data, and (c) the LIWC psychological processes using content analysis.

The subquestions were: Who were the attackers? Where were they from? Where and when did the attack take place? Who were the first responders? What missteps occurred? What lessons were learned? What actions were taken and why?

Historical data analysis. The terrorists were Saudi Arabian Jihadists that hijacked two passenger jets full of fuel and flew them directly into the North and South towers of the WTC on September 11, 2001 (The 9/11 Commission Report, 2004). Two other passenger jets were also hijacked that day. One Jet flew into the Pentagon in Northern Virginia and the fourth jet crashed in a field in Shanksville, Pennsylvania (The 9/11 Commission Report, 2004).

The first responders to the 9/11 attacks at WTC were FDNY, EMS, NYPD, OEM, PAPD, civilian and military volunteers to include NYSMF. The 9/11 Commission Report (2004) documented the missteps that occurred: GZ disaster site was not controlled, radios and communication links were not compatible, OEM headquarters was inhabitable early in the incident also in the early phase of the disaster FDNY lost significant leadership when the Towers imploded. Dispatchers for FDNY and EMS could not control the ingress and egress to GZ thereby creating a mass of NYC vehicles that blocked and jammed access to the narrow tip of lower Manhattan (The 9/11 Commission Report, 2004).

Numerous lessons were learned: OEM established a new state of the art headquarters building in Brooklyn, N.Y. FDNY acquisitioned new radios and communication links and NYPD and FDNY are now required to liaison and monitor each of their counterpart's communication links. Copious requirements and recommendations were delineated and acted upon as established by The 9/11 Commission Report (2004).

The most significant action taken was the formation of the 9/11 commission in 2002. A detailed and comprehensive study linking the 1993 bombing of WTC and the subsequent attacks to the U. S. on 9/11 presented a detailed report with numerous recommendations one of the most significant included the formation of a new cabinet level government agency: The Department of Homeland Security (The 9/11 Commission Report, 2004).

Current informants' profile. CIOH1 is a male and a medic in the NYSMF. CIOH2 is a male and supervises operations for the 69th Regimental armory. CIOH3 is a male and is the Assistant G3 for the 42nd infantry Division. CIOH4 is a male and a

special operations officer in the New York State Naval Militia. CIOH5 is a male and the Chaplain for the New York Army National Guard. CIOH6 is a male and the Surgeon General for the New York Army National Guard. CIOH7 is a male and is the Task Force Commander for the NYSMF. See Table 11 for the current informants' profile chart.

Thematic analysis for current informants. Six main themes were developed for the current informants: location at time of the attacks, deployment/orders, mobility to GZ, first impressions, subsequent days' impressions, unity of command, interaction/ teamwork, challenges/resources, health concerns, and summary of the mission. See Table 11 for a listing of the themes and their applicability to each.

Table 11

Current Informants' Profile Chart

Informant pseudonym	Military occupational specialty	Gender	Location at time of attacks	Deployment to WTC	Mobility to WTC
CIOH1	Medic	Male	NYC	Immediate	GV
CIOH2	Operations	Male	NJ on recon	five hours	GV
CIOH3	Asst G3	Male	Home	24 hours	GV
CIOH4	Operations	Male	Asheville, NC	48 hours	PV
CIOH5	Chaplain	Male	NYC	three hours	PV
CIOH6	Surgeon	Male	Oswego, NY	Not stated	NS
CIOH 7	Commander	Male	53 Armory	Immediate	GV

Note. Asst-assistant, CIOH = represents current informants' oral history, NC = North Carolina, NS = Not stated, NJ=New Jersey, NYC = New York City, GV = government vehicle, and PV = privately owned vehicle, Recon= reconnaissance.

Theme 1 location at time of attacks. Not all the informants were at a military base when news of the attacks on the WTC broke. CIOH1 was at work and CIOH2 on a recognizance mission and informed that they were traveling back to base from New Jersey. Informants' CIOH3, CIOH5, and CIOH6 were at home, and CIOH4 was at work

in his civilian job in North Carolina and had difficulty making it back to base due to closure of airport space. Only CIOH7 was on base.

Theme 2 deployment/orders. Although some informants received verbal military orders to GZ (CIOH2, CIOH3, CIOH4, and CIOH6), others (CIOH1, CIOH5 and CIOH7) used their initiatives and drove to the scene.

Theme 3 mobility to GZ. Some informants recounted that they were able to access military vehicles/escorts to GZ (CIOH1, CIOH2, CIOH3, and CIOH7), others (CIOH4 and CIOH5) reported that they had to selftransport using their personal vehicles. CIOH6 had no response to conveyance to the scene.

Theme 4 first day impressions. CIOH1 reported to his armory minutes after the attacks on WTC and advised that "… it was a horrible scene…it was nasty". CIOH3 rode a convoy in to GZ and witnessed "body parts just laying all over the streets". CIOH7 conducted a leader's recon when first ordered to form the Task Force that was to be deployed to GZ. At the time of the attacks, PIOH7 stated the rules of engagement at the onset of the mission, and under the current defense condition at the time, called for NYSMF to be armed. CIOH7 decisively ordered four NYSMF Battalions to deploy and secure GZ. According to the rules of engagement the truck and Humvee convoy had their machine guns mounted. Several units of the NYSMF responders were reported driving into New York City with 50 Caliber Machine Guns mounted on the vehicles (CIOH3). The Mayor's office when notified that NYSMF were arriving in NYC with weapons, the city authorities immediately rescinded the authorization of weapons. CIOH7 acquiesced and NYSMF teamed up with the armed NYPD teams at GZ. The initial assessment from CIOH7 during the first day on scene was a significant lack of communication between

agencies complicated by FDNY senior leadership casualties within the first hours of the 9/11 WTC attacks.

The main element of the NYSMF, approximately 2000, arrived the evening of the attack (CIOH7). CIOH2 reporting into the Lexington Armory, five hours after the attacks, found the armory in a state of "chaos". Troops were reporting in and the Mayors' office wanted the NYSMF to give up two floors of the armory to civilian homeless. The main floor of the armory was designated as a bereavement center in which family members would provide DNA samples to the authorities. The main floor of the armory was also receiving the reporting NYSMF personnel and their equipment. There were additional 3,000 to 4,000 people wrapped around the armory for city block waiting to register their missing family members' DNA samples (CIOH2). Public telephones and some cellular phones were not working within NYC adding to the confusion (CIOH3). CIOH7 also reported with the WTC towers no longer available there was very little landline or cellular communication available. CIOH4 arrived GZ two days after the attacks and "found the scene of the rescue workers fairly chaotic". CIOH5 was told by his headquarters to report to two separate locations to rendezvous with troop convoys at Randall's Island. Without any successful link up CIOH5 decided to report on his own recognizance to the 7th Avenue Armory.

Theme 5 subsequent days' impressions. The days following the attack proved difficult for the informants as they navigated their way around GZ and tried to execute their orders. The Task Force Commander felt that 72 hours into the disaster felt OEM sustained control of the disaster and had praise for the NYSMF commanders: "Life death situation; these commanders took the bull by the horns and executed" (CIOH7). Spending

five hours at GZ, CIOH1 asserted that all was not well on the pile (GZ) during the first week. First conducting triage and then administering to the wounded, CIOH1 remarked wearily "I started to smell like fire, dust, sweat like everything", had to change uniforms at least twice during the tour of duty at GZ, and exclaimed that he constantly heard from the FDNY rescue workers "…complaining about the dust and the smoke, I can't breathe.".

Theme 5.1 unity of command. A major element of the 42nd Infantry Division were training at Fort Leavenworth, KS and were not available to provide command and control to their units at GZ. It was disconcerting to CIOH3 that the FAA cancelled all air traffic and the respective commanders and staff of the 42nd Infantry Division were not able to immediately return to NY. An aviation brigade was substituted in and tasked to control several the 42nd division elements. Procedures and the lack of familiarization of procedures protocols and reporting were a problem (CIOH3). CIOH3 also reported there was additional problems between the Army National Guard and the Air National Guard in communication. The NYSMF engineers were also lacking the tools and equipment and could not adequately support the iron workers.

Theme 5.2 interaction/teamwork. According to CIOH7, civilian support to the NYSMF was outstanding. One of the keys to evade miscommunication was to place liaison officers with the major NYC and federal agencies. In addition, NYSMF previous disasters like the recovery of TWA flight 800 in 1996 and all the intensive preparation required for Y2K laid the groundwork for the NYSMF to respond "magnificently" (CIOH7). Describing his experience at GZ, CIOH1 expressed exhilaration with so many volunteers, doctors, nurses, EMTs, and medics working so well together. Speaking to

comradery and teamwork, CIOH4 expounded on the cooperation of the many different agencies during various assignments.

Theme 5.3 challenges/resources. NYSMF engineers lacked the appropriate equipment to work on the pile and CIOH3 was exasperated that the NYSMF was not in possession of the required heavy-duty cranes and torches powerful enough to cut steel. On the way to GZ, CIOH1 stopped at a public medical supply store, anticipating a requirement for large volume supplies. The manager was only too happy to donate the bandages and other supplies to the GZ disaster (CIOH1). NYSMF helped to construct portable showers and tents to support the fire-fighters and other the volunteers working on the pile (CIOH4). Several members of NYSMF were on orders for three weeks or more and were assigned a bevy of tasks from evaluating homes for structural safety, escorting VIP's to and from GZ, and the organization of donated clothing (CIOH4).

Theme 5.4 health concerns. History is replete "… in every single war more soldiers are lost to disease then to gun-fire" and Hepatitis B was always a concern in deployments due to lack of hygiene and poor sleeping conditions (CIOH6). Exposure to the death, mutilated bodies, and the toxic dust raised concerns for both CIS/PTSD and long-term health issues (CIOH6).

Theme 5.5 toxic environment. Concerns regarding "respiratory infections, trauma, and exacerbation of existing injuries" (CIOH6). The effects of toxic environment and health concerns was also addressed by CIOH4. In working in the rubble and inhaling fumes, CIOH4 despairingly "inspected the pulverized particles that were infused with the definitive order of jet fuel." In frustration, CIOH7 assessed the situation at hand thus:

"the largest concern was the long-term effect of inhalation of smoke and the polluted environment at GZ".

Theme 5.6 CIS/PTSD. Speaking of the troubling and unfortunate work of handling dead bodies and body parts at the pile, soldiers would have to mark them with a flag or a cone and "it was hard to process the enormity and the magnitude of the destruction" (CIOH3). Anticipating the NYSMF to be conducting long shifts entwined with the proximity to morbidity and death, the CIS/PTSD, 22 NYSMF CISM teams consisting of psychologists were organized by CIOH6 and an additional 12 CISM teams consisting of chaplains. Speaking to the mental anguish of NYSMF soldiers returning from working on the pile, CIOH2 was frustrated about the conflict endured when they accosted by berated family members showing pictures of the love ones and constantly inquiring if the soldiers had seen their family members. The soldiers were not prepared for this emotional stress (CIOH2). A Red Cross worker from Pennsylvania spoke to CIOH1 and gave a pamphlet explaining what the PTSD symptoms were and suggested that the medic may be suffering from PTSD.

Theme 6 summary of the mission. Proud of the professional response exhibited by the NYSMF and how the Task Force worked against "insurmountable problem" CIOH7 was pleased with the outcome. The historical active duty missions of the NYSMF during the 1996 Fight 800 disaster and the preparation and execution during the Y2K operation in December of 2000 helped prepare NYSMF in task force structure and exposure to mass casualties and establishing liaison officers with the major agencies is vital and CIOH7 also emphasized "Commander familiar with the area is important advantage in these types of operations". Recommending better preparedness by the

NYSMF, CIOH7 stated future Task Forces should be better equipped, anticipate needs, and have equipment prestaged. It is an imperative to have redundancy in communication and to keep cohesive unit integrity when possible (CIOH3). Hygiene factors for the fire-fighters and other pile workers according to CIOH4 it is vital to construct showers, refurbish damaged equipment, and continually clean equipment. See Table 12 for timeline of current informant themes beginning with when the news of the attacks broke and ending with a summary of the mission.

Table 12

Timeline of Current Informant Themes

All themes based on	CIOH1	CIOH2	CIOH3	CIOH4	CIOH5	CIOH6	CIOH7
Location on 9/11	AW	TB	HB	OT	TB	HB	HB
Deployment/ orders	OB	AW	OB	OB	PV	OT	C/LC
Mobility to GZ	MV	TB	MV	PV	MV	OT	MV
Day 1 first impressions	SA	CC	CC	CC	SC	TE	SW
Subsequent days feelings	OW	GI	SW	CA	GI	CC	C/LC
Unity of command	GI	C/LC	FR	SW	C/LC	FR	CA
Interaction/ teamwork	GI	GI	GI	EC	AR	PI	GI
Challenges – resources	LR	LR	LR	SC	GI	AG	LR
Health concerns	TE	TE	TE	TE	PTSD	TE	OT
Summary of the mission	EC	EC	HS	EC	AR	CC	GI

Note. AG = angry, AR = adequate resources, AW=at work, CA = charged with adrenalin, CC= chaotic, confusion , C/LC = commander/leader control, DP = depressed, DR = donated resources, EC = espirit de corps, FR = friction, GI = good interaction, HB = home base, HS = happy to serve, LR = lack resources/rations, MB = military base, MV = military vehicle, NC = no control, NT = non-toxic environment, OB = ordered to base, OT = other, OV = on vacation, OW = overwhelmed, PI = poor interaction, PTSD=posttramatic stress syndrome, PV = personal vehicle, SB = self to base, , SC = selfcontrol, TB = travelling to base, TD = tired, SW = shoulders to the wheel TE = toxic environment.

Constant leadership was emphasized by CIOH6 and the requirement to supervise and maintain PPE equipment was stressed. Special care and instruction is mandatory argued

by CIOH6, especially in the use of respirators in a toxic environment. The NYSMF ultimate success working with the different agencies, volunteers and people around GZ was summed up by CIOH7: “Treat all people with dignity”.

LIWC psychological analysis for current informants'. For the current informants, the CIOH1 and CIOH4 exceeded the social process LIWC mean of 9.74 with 11.9 and 10.6 values respectively. It should be noted both informants were able to easily engage and integrate well with their fellow responders outside of the NYSMF. In the cognitive process CIOH7 was the only informant above the LIWC mean with a 10.98. CIOH4 perceptive process 2.77 was the only informant above the LIWC mean. PIOH6 and CIOH1, the two informants with medical background exceeded the LIWC mean in the biological process (.9) with 3.5 and 2 respectively. Drives process all but one of the informants exceeded the LIWC mean indicating this group were well motivated and single minded in purpose. Time Orientation were dramatically significant for CIOH1, CIOH4 and CIOH7 all above the LIWC mean. Personal concerns were led by CIOH6 and CIOH3 and finally informal spoken language was not significant to register any numbers for the current informants. This may be due to their discipline and the fact it was a process formal interviews provided by their command. In the aggregate the highest mean was relativity at 7.13 (1.07), followed by time orientation (1.16), with cognitive process third at 2.98 (.36).

Content and statistical analysis for current informants. A comparative analysis between the CIOH sample and LIWC psychological domains showed that CIOH process domain showed the most difference 2.5 (.36) compared to the LIWC 9.74 (3.98)

and the CIOH drives domain demonstrated the least difference 2.93 (.65) as compared to the LIWC of 4.64 (2.06).

Descriptive statistics. LIWC reported the means with the standard deviation in parenthesis (SD) for each of the 10 psychological domains in respect to the current informants. See Table 13 for means and SDs with a comparison to the LIWC means.

Table 13

Comparison of Current Informants' Psychological Domains (n=7)

	Current informants		LIWC	
Domains	Mean	Standard deviation	Mean	Standard deviation
PP1APD	1.10	2.78	5.57	1.99
PP2SPD	2.35	.36	9.74	3.98
PP3CPD	2.98	.36	10.67	3.02
PP4PPD	.99	.44	2.70	1.20
PP5BPD	.75	.28	2.03	1.39
PP6DD	2.93	.65	4.64	2.06
PP7TOD	5.6	1.16	__	__
PP8RD	7.12	1.06	14.26	3.18
PP9PCD	.66	.27	__	__
PP10ILD	.38	.23	2.52	1.65

Note. PP1APD = affective processes domain, PP2SPD = social processes domain, PP3CPD = cognitive processes domain, PP4PD = perceptual processes domain, PP5BPD = biological processes domain, PP6DD = drives domain, PP7TOD = time orientation domain; PP8RD = relativity domain, PP9PCD = personal concerns domain, and PP10ILD = informal language domain.

Inferential statistics. A one-way within subject's ANOVA was conducted to compare the effects of LIWC psychological processes (IV or treatment variable) on 9/11 informants' scores (DV or outcome variable). The result showed that at the null hypothesis was not rejected at the .05 level of significance. There were no significant

differences between the three groups of informants (past, present, and future) as determined by a one-way ANOVA [F (2,33) = .08, p = .982]. See Appendix E for a visual depiction of the ANOVA results.

Analysis of Research Question 3

The research question asked: What were the EMS *future* informants' perspectives, post9/11, on disaster response preparedness? The evidence was sourced (a) from five *archival* interviews with emergency management services (EMS) personnel, (b) from historical and current data on what disaster response preparedness changes have been implemented since the 9/11 attacks that impact not only the NYSMF but also the wider community, and (c) from the LIWC psychological processes using content analysis.

The subquestions were: What changes have since been implemented in response to the 9/11 terrorist attacks that impact not only the NYSMF but also the wider community? What reports were commissioned and by whom? What laws were passed? Why and where were the wars started? How have health concerns been treated? What lessons were learned? What honors were bestowed on the NYSMF personnel who served during the 9/11 WTC attacks?

Historical data analysis. Significant changes in organization, funding and delineation of responsibility have since been implemented in response to the 9/11 terrorist attacks. The 9/11 Commission Report (2004) provided guidance to all government agencies recommending respective funding lines to be transparent. Information sharing is imperative with a balance between confidentiality and collective intelligence (The 9/11 Commission Report, 2004). The Department of Defense was ordered to support DRP activities with enough assets, from the Northern Command, which is responsible to

defend the homeland. The Department of Homeland Security is to review and to regularly assess the significant threats to the homeland (The 9/11 Commission Report, 2004). Subsequent to 9/11 attacks, NYSMF units have been provided PPE and participate in urban rescue and recovery training (Mincey, 2018).

The most significant report published was The 9/11Commission Report (Kean, 2004). The congress passed the Intelligence Reform and Terrorism Prevention Act of 2004 establishing a Director of National Intelligence whose responsibility is to coordinate the 15 federal intelligence agencies (Title I of Public Law 108-458; 118 Stat.). The evening of 9/11 the President and a select number of cabinet advisors discussed the options for going to war (Keane, 2004). Initially the federal government declared the environment safe at GZ in NYC. Numerous studies and complaints of cancer and other ailments due to the exposure of toxic substances and claims of PTSD have since been reconciled in the James Zadroga 9/11 Health and Compensation Act of 2010.

Two wars were declared following the 9/11 attacks upon the U. S. under the banner of the GWOT (Eaton, 2019; Wong, 2008). The President's declaration of a war on terror on September 20, 2001 was based on the Taliban's sheltering a safe-haven for the al-Qaida terrorists that planned and attacked the U. S. from Afghanistan (Eaton, 2019). The second War against Iraq was declared by the U. S. President, March 19, 2003, was based on intelligence that Iraq possessed weapons of mass destruction and posed an existential threat to the U. S. and its' allies (Wong, 2008). Crawford (2018) the total cost of both wars as of 2018 was 2,401 American military lives and 2.4 trillion dollars in expenditures. The war in Afghanistan continues today and is in its 18th year, marking it as the longest duration of any was the U. S. taken part in (Eaton, 2019).

Lessons learned included the establishment of a Joint Command Authority with Dual Status for both Title 10 and Title 32 authority, there by integrating and coordinating State Militias and Federal service members under a single Task Force Commander (Schumacher, 2011; Schwabel, 2007). The Real ID Act of 2005 was enacted and was derived from the GWOT to strengthen federal ID cards including driver's licenses and personal IDs (The Real ID Act, 2005). Finally, several medals were issued to NYSMF to include unit recognition ceremonies post 9/11 were conducted.

Future informants' profile. FIOH1 was is a male and a regional director of New York State homeland security and emergency medical services. FIOH2 was a male and a city Fire Chief. FIOH3 was a male and a volunteer worker with the Red Cross that spent two weeks in NYC during 9/11. FIOH4 was a male and a medical network emergency preparedness manager. FIOH5 was a female and a medical network spokeswoman. See Table 14 for a summary of the future informants' profiles. See Table 14 for a chart of the future informants' profile.

Table 14

Future Informants' Profile Chart

Informant pseudonym	Gender	Occupation	Organization
FIOH1	Male	Regional director/EMS	Homeland security
FIOH2	Male	Fire chief	Local fire department
F1OH3	Male	9/11 volunteer	American Red Cross
FIOH4	Male	DRP manager	Local hospital
FIOH5	Female	Hospital spokeswoman	Local hospital

Note. DRP = disaster response preparedness, FIOH = future informant oral history.

Thematic analysis. The future informants presented three major themes relating

to DRP: future threats**,** training, and preparedness.

Theme 1 future threats. A shift in emphasis, was presented by FIOH1, from agencies to individuals and dealing with current threats from both man-made and natural disasters. Active shooter, hazard material spills, and terrorist activities are now more common and require attention as do natural disasters, such as tornadoes, flooding, and hurricanes pose possible disasters to individuals as well as communities (FIOH1).

Theme 2 training. Research, education, and training were emphasized by FIOH1 as well as the utilizations of websites such as the New York Aware Prepare website that will help NYC citizens to be a stronger force in times of crises (FIOH1). Individuals and local agencies can use local municipalities for training and employ resources such as pumps and generators (FIOH2).

Theme 3 preparedness. According to FIOH1, the emphasis was on transitioning DRP from government agencies to the New York State citizens, so that each person will be able to help themselves and their family and thereby help the community in the event of future disasters. Emphasis in building partnerships with other nongovernment agencies (NGOs) around the country is the new imperative and advocated by FIOH3. When individuals and communities are better prepared, there is less emphasis on search operations and victims' recovery according to (FIOH2). There is a need for community outreach in respect to DRP and FIOH3 advocated for researching, planning, and developing relationships between NGO's and municipal agencies. Drills and practical exercises, as counseled by FIOH5, are required to refine the state's disaster plans. The more the individual or group is prepared the less resources maybe required for DRP and recovery teams (FIOH3). Planning and designated safe rooms within abodes may

possibly provide protection to include emergency kits stored and accessible (FIOH3). Adding awareness to the Red Cross' smart phone apps with hospitals connected to both government and local institutions will expedite preparedness and response (FIOH4). Emphasis for safety in future disasters requires appropriate proactive action (FIOH5).

Additional thematic data analysis from the NVivo software revealed several themes stemming from frequently used words that can be viewed in the form of NVivo derived Wordles in Appendix D.

LIWC psychological analysis. The LIWC mean for biological process was 2.03 and the mean for future informants was 2.59. Most of the future informants belong to a medical related field and their word count is consistent to the informants' occupations. The drives process for the future informants of 8.28 is also significantly higher than the LIWC mean of 6.98. Personal concerns process almost doubled the LIWC mean 4.62 to 2.56. The background and natural empathy from the leaders of prevention are obviously committed to their field.

Content and statistical analysis. A comparative analysis between the FIOH sample mean and LIWC psychological domains mean showed three domains that had the most difference from the LIWC mean and follow in order of magnitude: The future informants'' relativity domain of 4.52 (1.94) had the most difference from the LIWC mean of 14.26 (3.18), social domain followed with a 1.28 (.47) compared to the LIWC mean of 9.74 (3.98) and lastly cognitive processes domain mean of the future informants'2.16 (.97) compared to the LIWC mean of 10.61 (3.02). In the biological processes' domain, the FIOH mean of 1.20 (.55) and the LIWC mean of 2.03 (1.39) had the least difference in the analysis.

The past informants LIWC analysis means were high in relativity domain with a mean of 9.19 (.87) and time orientation with a mean of 4.64 (.31). In a comparative analysis past informants' cognitive process domain mean of .24 (.74) was significantly less than the LIWC mean of 10.61 (3.02). The past informants' informal language domain showed no difference with both having means of 2.52 (1.65). See Table 15 for a comparative chart on the future informants' psychological processes domains.

Descriptive statistics. LIWC reported the means with the standard deviation in parenthesis (SD) for each of the 10 psychological domains in respect to the future informants. For the Future informants, the highest means were time orientation and relativity at 4.52 each (1.94), followed by drive at 2.58 (.58), and cognitive at 2.16 (.98). See Table 15 for Comparison of Future Informants' Psychological Domains (n=5).

Inferential statistics. A one-way within subject's ANOVA was conducted to compare the effects of LIWC psychological processes (IV or treatment variable) on 9/11 informants' scores (DV or outcome variable). The result showed that at the null hypothesis was not rejected at the .05 level of significance. There were no significant differences between the three groups of informants (past, present, and future) as determined by a one-way ANOVA [F (2,33) = .08, p = .982]. See Appendix E for a visual depiction of the ANOVA inferential statistics results.

Synthesis of the Findings

RQ1. The February 26, 1993 truck bomb attack on the WTC was conducted by al Qaeda terrorists. The bombing exposed weaknesses and vulnerabilities of the WTC and the NYC DRP. Hardening the WTC and improved DRP procedures were incorporated and established from lessons learned.

Table 15

Comparison of Future Informants'10 Psychological Domains (n=5)

	Future informants		LIWC	
Domains	Mean	Standard deviation	Mean	Standard deviation
PP1APD	1.24	.76	5.57	1.99
PP2SD	1.28	.47	9.74	3.98
PP3CPD	2.16	.97	10.61	3.02
PP4PPD	.64	.58	2.70	1.20
PP5BPD	1.20	.55	2.03	1.39
PP6DD	2.58	.58	6.93	2.03
PP7TOD	4.52	1.94	--	--
PP8RD	4.52	1.94	14.26	3.18
PP9PCD	.43	.38	--	--
PP10ILD	.074	.16	2.52	1.65

Note. PP1APD = affective processes domain, PP2SPD = social processes domain, PP3CPD = cognitive processes domain, PP4PD = perceptual processes domain, PP5BPD = biological processes domain, PP6DD = drives domain, PP7TOD = time orientation domain; PP8RD = relativity domain, PP9PCD = personal concerns domain, and PP10ILD = informal language domain.

The past informants experienced chaos, and confusions, a lack of DRP interaction and demonstrated leadership by taking initiatives and by being resourceful.

Content and statistical analysis between the past informants. Cognitive process domain mean of .24 (.74) was significantly less than the LIWC mean of 10.61 (3.02). The past informants' informal language domain showed the no difference with a mean of 2.52 (1.6), which equaled the LIWC mean of 2.52 (1.65). See Table 10 for a comparison between the past informants' psychological processes domains and LIWC means.

Descriptive statistics. The means and standard deviations were conducted 10 psychological processes using the Statistical Package for the Social Sciences (SPSS). The mean for the affective processes with standard deviation in parenthesis was rounded off from .9950 in table below 1.00 (.30). A comparative analysis between the past informants' cognitive process domain mean of .24 (.74) was significantly less than the LIWC mean of 10.61 (3.02). The past informants' informal language domain showed the no difference with a mean of 2.52 (1.6), which equaled the LIWC mean of 2.52 (1.65).

Inferential statistics. A one-way within subject's ANOVA was conducted to compare the effects of LIWC psychological processes (IV or treatment variable) on 9/11 informants' scores (DV or outcome variable). The result showed that at the null hypothesis was not rejected at the .05 level of significance. There were no significant differences between the three groups of informants (past, present, and future) as determined by a one-way ANOVA [F (2,33) = .08, p = .982].

RQ2. The 9/11 attacks on the WTC were not anticipated and even with the lessons learned incorporated and applied from the 1993 attacks, the dramatic destruction and magnitude and size of destruction, toxicity and PTSD challenged all responders to include the NYSMF. Poor communication, loss of leadership, inadequate training and coordination were all lacking on the first day of the disaster. During the subsequent days, coordination, communication, and Esprit de Corps improved and rescue transitioned into recovery operations. The establishment of the 9/11 commission produced many detailed lessons learned and best practices from the both 1993 and 2001 attacks on the WTC (The 9/11 Commission Report, 2004). Improved DRP approaches were conceived and were subsequently applied, The Global War on Terror was declared and continues to be waged

at a cost in terms of lives and national treasure. The Dual Status Commander now provides one commander the authority to command both Title 10 and Title 32 federal armed forces and state militias respectively (Schumacher, 2011). The Real ID Act of 2005 was also developed as a result of the 9/11 attacks (The Real ID Act, 2005).

Content and statistical analysis for current informants. A comparative analysis between the CIOH sample and LIWC psychological domains showed that CIOH process domain showed the most difference 2.5 (.36) compared to the LIWC 9.74 (3.98) and the CIOH drives domain demonstrated the least difference 2.93 (.65) as compared to the LIWC of 4.64 (2.06).

Descriptive statistics. LIWC reported the means with the standard deviation in parenthesis (SD) for each of the 10 psychological domains in respect to the current informants. See Table 13 for means and SDs with a comparison to the LIWC means. Content and statistical analysis between the CIOH sample and LIWC psychological processes domains showed that CIOH process domain showed the most difference 2.5 (.36) compared to the LIWC 9.74 (3.98) and the CIOH drives domain demonstrated the least difference 2.93 (.65) as compared to the LIWC of 4.64 (2.06).

Inferential statistics. A one-way within subject's ANOVA was conducted to compare the effects of LIWC psychological processes (IV or treatment variable) on 9/11 informants' scores (DV or outcome variable). The result showed that at the null hypothesis was not rejected at the .05 level of significance. There were no significant differences between the three groups of informants (past, present, and future) as determined by a one-way ANOVA [F (2,33) = .08, p = .982].

RQ3. Emergency management was elevated in research, planning, training (of community members), and DRP to support at the national, state, municipal communities in NYC at the individual, group/team, and organizational/systems levels. The purpose of the emphasis on research, education and preparedness was to make the individual, the local municipality, and the state more resilient, thereby minimizing the casualties in a man-made or natural disaster.

Content and statistical analysis. A comparative analysis between the FIOH sample mean and LIWC psychological domains mean showed three domains that had the most difference from the LIWC mean and follow in order of magnitude: The future informants'' relativity domain of 4.52 (1.94) had the most difference from the LIWC mean of 14.26 (3.18), social domain followed with a 1.28 (.47) compared to the LIWC mean of 9.74 (3.98) and lastly cognitive processes domain mean of the future informants'2.16 (.97) compared to the LIWC mean of 10.61 (3.02). In the biological processes' domain, the FIOH mean of 1.20 (.55) and the LIWC mean of 2.03 (1.39) had the least difference in the analysis.

Descriptive statistics. LIWC reported the means with the standard deviation in parenthesis (SD) for each of the 10 psychological domains in respect to the future informants. For the Future informants, the highest means were time orientation and relativity at 4.52 each (1.94), followed by drive at 2.58 (.58), and cognitive at 2.16 (.98). See Table 15 for means and SDs with a comparison to the LIWC means.

Inferential statistics. A one-way within subject's ANOVA was conducted to compare the effects of LIWC psychological processes (IV or treatment variable) on 9/11 informants' scores (DV or outcome variable). The result showed that at the null

hypothesis was not rejected at the .05 level of significance. There were no significant differences between the three groups of informants (past, present, and future) as determined by a one-way ANOVA [F (2,33) = .08, p = .982].

Chapter 5: Discussion

Overview and Significance of the Study

The 9/11 terrorists' attacks on World Trade Center were a new paradigm in terms of massive destruction and environmental toxicity. Government agencies at all levels were not prepared for the devastation, massive casualties and Disaster Response Preparation (Biello, 2011; Crane et al, 2014). Accumulating to the initial 2,966 deaths are those that continue to die and suffer from their exposure to toxins permeating Ground Zero and the many others suffering from Critical Incident Stress/PTSD (Bergen, 2018; Otis, 2016). In the volatility, uncertainty, complexity and ambiguity era, the ferocity of disasters both natural and man-made in both magnitude and parameters require domestic and international framework from which to plan, to deter, mitigate, and recover (Kraaijenbrink, 2018)

It is therefore important to explore, the DRP by four survivors of the 1993 WTC bombing representing the past, the seven NYSMF during the 9/11 terrorist attacks at the WTC representing the present, and the five EMS professionals that have studied the previous attacks and have researched, and provide instruction on the diferent aspects of DRP representing the future. In addition, explore the CIS/PTSD and the physical health impact on the NYSMF serving at the WTC site during 9/11.

The literature review covered motivational, humanistic, behavioral, and psychological models relevant to all informants' past, present, and future. GWOT conflicts were addressed and the amazing boatlift that evacuated over 500,000 evacuees was documented. The methodological method used both qualitative and quantitative research. Heuristic and interpretive context was used to perform content analysis using

historical data, oral history and the LIWC analysis provided the quantitative data as well as the descriptive and inferential statistics.

This chapter began with an overview of the study followed by the interpretation of the results, the implications of the findings, and a comparison with the current literature. Next, recommendations for future research directions are offered and is followed by the assumptions, delimitations, and limitations of the study. A synthesis as well as the conclusion of the study closes the chapter.

Discussion of the Findings for Research Question 1

RQ1 asked, what were the 1993 WTC bombing *past* informants' experiences with disaster response preparedness as survivors? The evidence was sourced from (a) historical data, (b) four *archival* interviews conducted pre9/11, and (c) LIWC psychological processes using content analysis.

The subquestions were: Who were the attackers? Where were they from? Where and when did the attack take place? Who were the first responders? What missteps occurred? What lessons were learned? What actions were taken and why?

Interpretation of the results. From the historical review it was shown that U. S. intelligence agencies, for example the FBI and CIA, were not always congruent in sharing intelligence. The FBI for example were constrained by agency policy to ensure all evidence was safeguarded for successful prosecution based on U. S. federal law. The CIA, however, was not so constrained and worked intelligence by CIA regulations. This divergence in policy became an impediment to the open and free-flowing distribution of intelligence. This left the U. S. vulnerable to attacks (The 9/11 Commission Report, 2004). Secondly, the lack of NYC DRP protocols regarding infrastructure of the WTC

placed the informants in a state of confusion and chaos immediately following the 1993 truck bomb attack on WTC. The informants were not notified that the WTC was attacked, and no system was in place to alert and or assist people within the building to when and how to evacuate the WTC. Among the LIWC's psychological domain cognitive process domain was significantly less than LIWC mean and there was no difference between the past informants and the LIWC mean.in the informal language domain. The inferential statistics finding demonstrated that the null hypothesis was not rejected. In effect, the findings were not statistically significant; there were no notable differences between the LIWC means and the past informants' means.

Implications of the findings. The consequence of the results was consistent with historical analysis that U. S government and NYC intelligence agencies were not prepared for attacks on infrastructure (The 9/11 Commission Report, 2004). The past informants appear to be implying that there was no interaction with first responders and no safety guidance planned or distributed thereby forcing them to conduct their own DRP. The NYC DRP findings summarized by both the 9/11 Commission Report (2004) and USFA (1993) required significant change to government intelligence agencies to share intelligence, a required revamp of DRP procedures focused on expedient evacuations of people from large infrastructures, and the importance for all municipalities. The program included all U. S. and international government agencies to study, plan, and practice drills, based on the best practices, to deter and or manage DRP stemming from future terrorist attacks NYC and established the OEM to coordinate all emergency responses in 1996 (The 9/11 Commission Report, 2004). Stewart (2015) pointed out that the 1993 truck bomb attack on WTC "...serves as an example of how

seemingly bumbling grassroots jihadists …become deadly when they link up with highly trained terrorist facilitators" (Stewart, p. 12). In addition, Wolf (1984) spoke to anticipating terrorist's attacks and how planning may deter or at least minimize the effects of an attack. In the 1993 bombing of the WTC, a truck bomb was driven into the garage by terrorists but what if the next truck or drone is operated by artificial intelligence and is driven or directed into a land or maritime infrastructure? According to Novosilska (2018), "The value of artificial intelligence in automotive manufacturing and cloud services will exceed $10.73 billion by 2024" (p. 1). It will be important for all government agencies not only be prepared for conventional attacks or disaster but will require to anticipate future threats.

Bridging theory to practice. The conceptual framework was developed around the concept of the individual (psychological factors), the group/team (socio-psychological factors), and the system/organization (sociological factors including the economic, cultural, and political environments). Wheeler (2011) introduced the concept of Dasein, for existence, being, or presence; which in this case relates to the way humans live their individual lives. The first two dimensions of Dasein were evident among the past informants in that they displayed umwelt, which embodies the natural environment. Without first responders to save them from the bombing attacks in the WTC (45 Floor), they survived by using physical/material things at their disposal for security and safety. They also called on mitwelt, which is the social dimension where people hone relationships and interactions with others based on cultural norms and social conventions in times of need (Seligman & Reichenberg, 2014; Van Deurzen, 1998, 2005, 2006). One

informant was able to corral almost everyone in her company down darkened stairs to safety and another was able to bring light to the darkness using donated penlights.

At the group/team level, the past informants utilized Lewin's group norms (as cited by Burnes, 2006) to navigate out of their predicament with volunteer leadership stepping up and taking over DRP roles in the absence of first responders/EMTs. The discovery of the actions taken by the informants' performance strengthens the theory that DRP requires continued theory and research focused in the communities to practice at the group level.

At the system level, the city DRP and U. S. government responses were not congruent. Senge (1990, 2006) systems thinking was not evident with DRP systems level; failure, collapse of the towers, and the lack of communication with both OEM and FDNY was absent in the leadership contingents. All contributed to the nonresponsive interaction between evacuees and responders.

Discussion of the Findings for Research Question 2

RQ2 asked, what were the NYSMF *current* informants' lived experiences dealing disaster response preparedness at the WTC on 9/11 and what were the effects of the toxic environment at Ground Zero, and the health concerns that surfaced? The evidence was sourced from (a) seven *archival* interviews conducted on 9/11 and the subsequent weeks following the attacks, (b) historical data, and (c) the LIWC psychological processes using content analysis.

The subquestions were: Who were the attackers? Where were they from? Where and when did the attack take place? Who were the first responders? What missteps occurred with NYSMF? What were their first impressions of Ground Zero? How did the

communication channels work? Were the channels opened and functional? What was the technological impact? What toxic environment/health concerns surfaced?

Interpretation of the results. From the historical data, the 9/11 terrorist attacks on the WTC, the Pentagon, and the hijacked flight plane that crashed at Shanksville, PA. were once again not anticipated by U. S. or U. S. aligned government agencies It should be noted that this study focused on the WTC and not the other sites. The informants accounts showed that chaos on the first day was the result of the massive destruction of the WTC, lack of leadership due to the OEM headquarter' s destruction and subsequent on-scene command posts constantly moved or inaccessible. The FDNY leadership was decimated and main elements were quickly lost casualties early in the DRP by the initial collapse of both towers. Communications were not integrated between the NYC agencies and FDNY was working with radios that were known not to be conducive in lower Manhattan environs (The 9/11 Commission Report, 2004).

This was not the first time a plane hit a New York City skyscraper. An Army Mitchell B-25 bomber losing navigation on a fogy morning crashed into the Empire State Buildings at the 79th floor (Nobles & Desman, 1945). The casualties were 14 dead and 24 injured. The debris from the airplane was scattered on several nearby buildings but there was minimal damage to the Empire State Building. The FDNY put out the fires within hours and the Empire State Building was reopened the next day (Nobles & Desman, 1945).

The informants stated they were not trained or equipped for DRP operations at GZ. The NYSMF were assigned security responsibilities at GZ and that their past experiences in the VUCA type operations helped in navigating the shock and awe

experienced by the NYSMF during the DRP. The LIWC results correlated the NYSMF emotional balance and assimilation in this DRP finding. This does not mean that the current informants were not emotionally moved by the destruction or death but indicated training and experience prepared the NYSMF to adapt and carry on their respective assigned missions. Informants shared experiences in the constant exposure of the toxicity at GZ and the stress emanating from the bodies discovered and family members constantly inquiring to the discovery of family members at GZ. The latter contributed to CIS/PTSD for the NYSMF at their respective armories and GZ.

The 9/11 Commission Report (2004) detailed the historic origins and numerous recommendations resulting from their findings. The results suggest, in effect, that both the federal and state and NYC agencies were not prepared for the terrorists' attack in 1993 and in 2001. The GWOT resulted in the U. S. immersed in two costly Wars one of which continues to date. The 9/11 disaster lead to the Dual Status Commander authority, the Real ID Act, The Patriot Act, and the 9/11 Compensation Act (115 Stat 272, 2001, H. R. 9/11 Compensation Act 2005; Schumacher, 2011: & Pub. L. 109 Stat. 302, 2005). Hagen and Carouba (2008) attributed significant bravery of many women responders whom sacrificed their lives to save others at GZ. Many women were on active duty with the NYSMF, but none were selected by the National Guard, Historical Branch to be interviewed among the 30 males interviewed documented online. This effectively stifled the women's voices from the NYSMF archival database. The researcher observed women within the NYSMF successfully accomplishing tasks assigned.

In the LIWC analysis, the current informants cognitive process domain showed the most difference from the LIWC mean and the current informants informal language

domain showed the least difference from the LIWC mean. The inferential statistics finding demonstrated the Null hypothesis was not rejected; there were no notable differences between the LIWC means and the current informants' means.

Implications of the findings. The regional and global implications relate to the terrorist threat, diversity, opportunity cost, DRP response, command and control, and health to include toxin exposure and the consequences of CIS/PTSD. Wolf (1984) addressed terrorism as an international threat. Japan, Germany, Italy, Puerto Rico, the United States have been terrorist targets. Recently, countries such as Russia, Spain, Holland, Norway, Libya, Turkey, Belgium, and France as well as Yemen, Pakistan, India, Iraq, Libya, Syria, Afghanistan, Nigeria and many more have been attacked by terrorists (U. S. Department of Homeland Security, 2017). Closer to the U. S., Richard Reid, a Jamaican born terrorist who was also known as the shoe bomber, boarded a plane from Paris to Miami. An alert flight attendant noticed that Reid had attempted to light a bomb fuse attached to his sneaker. The passengers and crew immediately restrained him (Harmon, Becker, & Saltonstall, 2016). Also connected to the Caribbean, Brown and Starr (2018) reported that the U. S. Armed Forces collaborated with Trinidadian authorities to capture four high-value targets that were believed to have conspired in the disruption the island's Carnival festivities with terrorist activities. Recently, two major Saudi Oil installations were attacked by 10 drones (Hubbard, Karasz, & Reed, 2019). ISIL and al-Qaida are global Jihadist terror groups, that are well financed and constantly evolving. Since 1994 three quarters of the terror attacks in Europe have had a total cost estimated at $10,000 (U. S. Homeland Security, 2017). Bensman (2018) reported that Jihadist volunteers are returning to their home islands in the Caribbean. There is a

genuine concern by the government authorities regarding the potential threat to the tourist industry (Bensman, 2018). The University of the West Indies at Mona established the first disaster resilience and crisis center to prepare for future disasters including cyber-attacks (Davis, 2019). Based on military intervention and a dose of good luck, Allison (2018) took a contrarian position and implied that ISIL is not the significant threat it once was to the West. Most of the ISIL training camps have been destroyed and the ISIL leadership is more concerned about personal detection. Wolf (1984) opined that merely anticipating, planning, and drilling for DRP may not prevent a terrorist attack, but a crisis management plan (CMP) may offer a timelier mitigation. A CMP is a contingency plan for an organization or infrastructure that is adaptable and provides coordinated procedures to enable quick response for abating anticipated or unexpected threats. See Appendix G for the outline of a CMP developed at Marine Barracks, Naval Air Station Bermuda. To implement the CMP, the Crises Alert Notification Form allows the designated duty personnel to initiate and record the timely response and actions by the chain of command and designated agencies. See Appendix H for a sample alert notification plan also developed for the Marine Barracks, Naval Air Station Bermuda (Wolf, 1984).

Citing from the New York State Naval Militia strategic plan for 2020, impending changes for the U. S. Navy, Marine Corps, and Coast Guard Reserve include evolving into a “smaller, mobile, mission-oriented force” (Citation Strategic Environment section). Other item of the plan includes reducing/consolidating Construction Battalion (CB’s) (Navy constructions elements) manpower, Marine Corp Reserve, Navy Operating Support Centers with and increased emphasis on cyber operations, U. S. Navy Reserve

(USNR) riverine/small boat operations, intelligence tasking, and reserve personnel travel to drill locations out of state. The plan also calls for strengthening personnel and unit readiness, equipment readiness, and training readiness, The NYNM mission is to "provide, when directed and upon order, fully capable naval forces prepared to execute missions in support of the New York State Division of Military and Naval Affairs" (NYSNM Plan, 2020, p. 1). The economy of force principal is applied moving from complexity to simplicity and becoming more adaptive and agile in task accomplishment (U. S. Marine Corps, 1996).

Heroes. The men and women of the NYSMF worked side by side during the 9/11 disaster. The 69th Regiment, that was in the thick of the rescue and recovery mission that consisted of a diverse group of soldiers the majority of which were men and women of color. Post 9/11, the 69th eventually deployed to Iraq with many of those that had served at GZ. Diversity also manifested in the heroic action. Hagen and Carouba (2008) acknowledged that thousands of women first responders took part in the 9/11 rescue and recovery operations at GZ but have not been credited.as they should for their service to the nation. NYPD officer Moira Smith was an NYPD officer who expedited multiple rescues for evacuees from fleeing the towers. Smith succumbed to the tumbling towers. Mark Bingham, an openly gay man, from San Francisco was one of the passengers that reportedly attempted to retake the plane that crashed in Shanksville, PA. Mohammed Hamdani, a NYPD cadet and Muslim, ran to the Towers to assist and never returned (Human Rights First, 2017). Danny Lewins, an MIT graduate and Israeli/American and a former special operations soldier, was allegedly stabbed from behind while attempting to stop American Flight 11 from crashing into the WTC (Raskin, 2013). NYPD officers,

Carol Paukner and Tracy Donahoe, were identified and recognized for their heroic work assisting evacuees from the WTC as well as Brenda Berman and Regina Wilson of the FDNY, were also recognized for the services rendered during the 9/11 disaster (Women You Should Know, 2017). Reitman (2016) opined on the impact of unconscious bias on diversity and inclusion. Unconscious bias can be hidden or implicit, but either form practiced in the workplace, can create barriers that "not only prevent people from working together effectively, but also damage the development of inclusive relationships, that foster creative and innovative ideas" (Para. 1).

Unity of command. In the first 24 hours of 9/11, the President of the U. S. A. was airborne and was not available for communication. The U. S. National Defense authorities, by protocol, automatically followed directives to increase defense posture which called for arming nuclear warheads and placing them on bombers. Russian authorities monitoring the increase in the U. S. defense condition responded in kind. This situation created confusion and potentially placed the U. S. and Russia governments on a nuclear war footing. Protocols were not followed, and the U. S. and Russia were not in communication during this absence of leadership and communication (Arkin and Windrem, 2016: Darling, 2010). Subsequently, DHS was established; shared intelligence was incorporated into the command structure and emphasized at all levels. Unity of Effort was developed to incorporate all the U. S. Intelligence agencies for coordination with full access and integration of intelligence shared at the two national intelligence centers.

Post 9/11 The Office of Emergency Management eventually move into a new state of the art headquarters located in Brooklyn. FDNY and NYPD were provided

integrated radio and computer communication networks and are now monitoring communications (The 9/11 Commission Report, 2004). See Figure 4 for a chart depicting the shared intelligence structure.

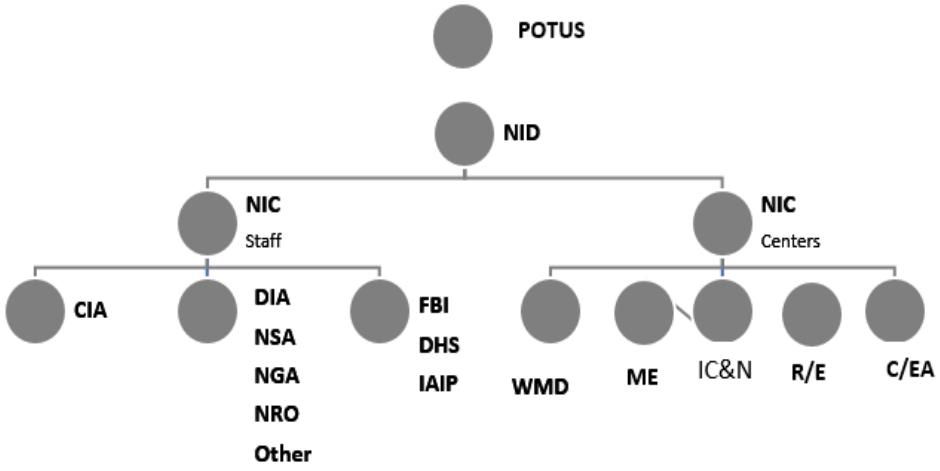

Figure 4. Unity of Effort in Managing Intelligence. POTUS = President of the U. S., NID = National Intelligence Director, NIC = National Intelligence Center, CIA =, Central Intelligence Agency, DIA = Defense Intelligence Agency, NSA = National Security Agency, NGA = National Geospatial-intelligence Agency, NRO = the National Reconnaissance Office, FBI = Federal Bureau of Investigation, DHS =Department of Homeland Security, WMD = Weapons of Mass Destruction, ME = Middle East, IC&N = International Crime & Narcotics, R/E = Russia/Eurasia =, and C/EA = China/East Asia . Adapted from: The 9/11 Commission Report, [Executive Summary]. (2004). *Final report of the National commission on Terrorist Attacks Upon the United States.* Retrieved from https://govinfo.library.unt.edu/ 911/ report/911Report_Exec.htm

The NYSMF have also modernized its command and control by virtue of the Dual Status Commander. The designated Task Force Commander will be empowered to command both federal armed forces personnel, state active duty personnel and the state militias (Schumacher, 2011; Schwabel,2007). Congress also determined to lean forward to support enforcement by passing the aviation and transportation security act and the U. S. Patriot act that expanded the capabilities of identifying terrorist activities (Chela, 2019).

Health concerns. Like resilience, posttraumatic growth (PTG) is different and more time-consuming in persons who do not possess the ability to bounce back quickly

from a traumatic event (Collier, 2016). Such individuals need more time to process the effects of the trauma as they struggle to psychologically (Collier). UNC (2014) added that the effects of PTG surfaces can take different paths. One is that the affected individual will see the crisis as an opportunity and attempts to overcome it. Others might become distant from people they were close to before the trauma or might connect better to similar sufferers. Still others might develop into stronger personalities than they were before the trigger and some might develop a more positive outlook on life. Finally, some individuals might become more spiritual and strengthen their beliefs in a higher power for pulling them out the nightmare they experienced (UNC, 2014).

Chronic respiratory infections, gastrointestinal diseases and cancers have directly been attributed to the chemical particulates that lingered at the site. Following reviews "human carcinogens, such as asbestos, silica, benzene, polychlorinated biphenyls, polycyclic hydrocarbons, and numerous metals were tested positive at GZ" (Crane et al., 2014, p. 13). Many significant health issues evolved from the toxicity not just at GZ but to the clouds of particles carried North of the city by heavy winds (McCallion, 2011). Observations were made and official observed that most workers at the rescue, recovery and the new construction site at the WTC did not decontaminate after leaving the site. The hand, face and boot stations were in place but not utilized. Respirators were issued but not often worn (Crane et al., 2014). Incidents of non-Hodgkins lymphoma, thyroid and prostate cancers. with 1,187 incidents as of 2014.

Yehuda and Bierrer (2009) added the relevance of epigenetics to the discourse. Individuals suffering from PTSD. Individual suffering from long-lasting effects of PSTD may not be impacted by the environmental factors alone but also by "epigenetic

mechanisms" (p. 427) that can modify intergenerationally the function of a gene in their DNA especially from the maternal parent. In respect to 9/11, Constandi (2011) revealed that nearly 2,000 pregnant women experienced trauma during the 9/11 attacks in New York and that some of them passed on PTSD to their unborn children especially those who were in the third trimester stage of their pregnancy. The children that were old enough and were watching television and /or those that lived in lower Manhattan observed the 9/11 attacks reportedly suffered from PTSD (Chelala, 2019).

Reque-Dragicevic (2019), a Bosnian counselor by profession, addressed acquired knowledge during three and half years trying to survive during the fighting in Sarajevo, Bosnia. Witnessing "mass shooting of military killing civilians and civilians killing military" left the author numb and indifferent (Reque-Dragicevic, p. 1). Subsequently, marrying and moving to the U. S., she eventually recovered and identified with the soldiers returning from Afghanistan and Iraq who were suffering from similar trauma. As more and more soldiers were returning from armed conflict, Reque-Dragicevic slowly began to understand the PTSD effects on the soldiers and their families. During battle, the individual soldier is filled with purpose and a sense of belonging (comradery) with their designated unit and fellow soldiers. When the soldier returns home and exits that life and death struggle, it significantly affects the returning soldier with a numb or empty sense of purpose. As the soldier transitions to a life and a new job, co-workers will not easily relate or understand the sense of loss the soldier is experiencing such as feelings of dislocation and lack of importance. These effects can be devastating, and many fall off the grid, becoming homeless, and/or commit suicide as their bodies battle to cope socially, emotionally, culturally, and politically. Reque-Dragicevic eventually became

successful in the recovery from PTSD and now volunteers with returning U. S. soldiers at no cost. The importance of her purpose is to "channel the service ethos's" (p. 1) for the former soldiers, thereby helping in their recovery from "the life death cycle" experienced (p. 1). Nowakowski (2019) described the body is an evolving structure that must be viewed from the context of the social, emotional, cultural, and political spheres. According to Nowakowski, the "Body Battlegrounds" (p. 2520) refers to the emotional and social level of conflict from within as well as the perception of others from the outside.

As Goodwin, Blacksmith, and Coats (2018) pointed out, teams are the foundational building blocks of military units through their hierarchical structures. At the group level, the current informants depended on the high performance of teams with a common purpose to execute their tasks. Most of the informants experienced good interaction with their assigned units and with other first responders even when they were not accomplished in the specific areas in which they were assigned. Few members were disgruntled with the situation at hand at GZ. The current informants used AI as a means to transport them through the four phases of an ideal future in the midst of chaos: discovery (what is), dream (what might be), design (what should be), and destiny (what will be) (Cooperrider, 2012). They drew on both planned and spontaneous change or drew on bricolage to get by.

From the perspective of OD at the systems level, the NYSMF informants showed a propensity to adopt both the evolutionary and the revolutionary styles (Mirvis, 2006). The military's OD system mostly followed an evolutionary/regimental style: continuous, linear, orderly, sequential, and incremental change that was quantitative in nature. During

9/11, a similar bureaucratic style based on Fayol's principles as cited by McNamera (2009) to include authority, unity of command/direction, forecasting, stability, subordination, centralization, and order but was forced out of this mode and into a more revolutionary intervention style that impinged on discontinuous, nonlinear, chaotic, and reciprocal change. In the revolutionary exchange, NYSMF members also called on some of Fayol's principles including initiative, division of work, and Esprit de Corps to gain traction at GZ (McNamera, 2009). This was the order of the day given the unknown enemy and the death and destruction they faced, and this style was more qualitative in nature (Mirvis, 2006). Huy (2001) proffered a combination of the two styles in nonurgent times. For instance, the commanding or battle plan style is very effective in military organizations and was also used by the past informants in the absence of professional DRP personnel to lead the charge. The engineering style or human capital style is more people and culture friendly than the commanding style and embraces work processes and technology. There was evidence that both the past and current informants supported this style of change.

From the organizational/systems or even societal standpoint, Hofstede's (n.d., 1983) cultural dimensions showed that the input from female voices/perspective were absent from the interview bank used in this study. This leads to questioning leadership's decision to exclude females from the 9/11 or GZ discourse. Of over 30 interviews, none were attributable to the female contingent although they are well integrated at both the officer and enlisted levels (Patten, 2011).

Finally, for all three levels, Bronfenbrenner's ecological system was used to show how an individual is inextricably connected to his or her environment from birth to grave

(Hoare, 2008). The model is based on concentric circles with the individual in the center and surrounded by the microsystem (connecting the individual to parents, family, and school), the mesosystem (indirect connection to the external environment – bank, health, religious), the exosystem (interactions with the media, the government, and the legal environment), and finally, and the macrosystem (interactions with culture, mores, folklore, and customs). All three sets of informants were adults and would have passed through all the ecological stages (Hoare).

From the organizational/systems viewpoint, Pascale et al (2000) studied the U. S. Army and found that for organizations to be nimbler and agile they must understand that they cannot maintain the status quo (if it ain't broke don't fix it mentality). This will lead to equilibrium and death. It is important that organizations realize that they are a living and breathing organism and without fresh air/perspectives, they will not survive (Pascale et al). Senge's five disciplines were also on display among the NYSMF members representing the system as whole. Evidence of team learning, shared vision, mastery, and mental models were provided throughout their accounts on 9/11, which when tied together resulted in systems thinking with some exceptions such as lack of communication and resources (OEM was dysfunctional, units in disarray, evacuating from its original headquarters located at Building 7 at the WTC to one on-scene command post to another as the on-scene command posts continually became untenable due to the magnitude of the destruction and the unforeseen collapse of the towers.. Leadership shortfalls, lethargy, state of flux, suboptimal performances, and questionable decision-making practices such as these brings Leibenstein's X-efficiency into play

where systems operate within their state of PPF instead of beyond it (Leibenstein, 1978; Robinson, 2016; Vanagunas, 1989).

From a societal standpoint, Hofstede's cultural dimensions showed that the input from female voices/perspective were absent from the interview bank used in this study. This leads to questioning leadership's decision to exclude females from the 9/11 or GZ discourse. Of over 30 interviews, none was attributable to the female contingent although they are well integrated at both the officer and enlisted levels (Patten, 2011).

Global warfare. Post 9/11, the world plunged into anticipating deeper terrorist threats. Booth's (2007) developed construct on world security that was based on six principles:

1. Strategic security dilemmas. Defining security is ambiguous. There are numerous aspects of security relative to the individual, national interests, international threats, natural disasters, safety, and psychological well-being. In Booth's construct more security means less freedom.
2. Population crises. A population must be freed from restrictions and allowed to work together for the good of the global community.
3. Environmental chaos. Global interests require cosmopolitan societies to work together in order deter threats such as climate change to the environment.
4. Threats to globalization. Nationalism and contemporary politics of self-interest are a threat to the global democracy.
5. Unreasonableness among political parties. Political systems do not seek the greater good outside of their respective interests.

6. Irrationality among nations. To reach a utopian and global society requires progressive political hope.

Leadership styles. With global warfare on the horizon, leadership style become critical to successful missions. The BKD model of leadership where the leader develops the requisite social change needed to be more inclusive. The Be emphasizes the character of the leader, the Know emphasizes resource management and knowledge gained through training, and the Do emphasizes the need to do the right thing when leaders are exercising influence over others (Quigley & Deloitte, 2012). By following this BKD path, leaders will develop the "acting as one" (p. 3), which is similar to the army's former recruitment slogan "Army of One" (The Associated Press, 2006). Leadership progression by OEM, FDNY, NYPD, and NYSMF demonstrated a progression of leadership models as evidenced by the incident command system utilized during the subsequent days following the 9/11 terrorist attacks at GZ (The 9/11 Commission Report, 2004). Quigley (2012) contributed to the epistemology of leadership. Combining leadership principles and traits delivers a plethora of perspectives that combine to provide evidence that will help hone DRP community leader skill sets.

Rewards and recognition. The Bravo Zulu acknowledgement portrays positive reinforcement dating two centuries of U. S. naval communication. The TAG of New York State presented individual and unit awards to the NYSMF several months following the 9/11 attacks, which served to recognize and thereby motivate the soldiers, marines, sailors, coast guard, and air guard members to inspire higher service. In doing so, Bravo Zulu strengthens the concept of maintaining morale and maintaining the pride and honor during the challenging climate at GZ (Naval History and Heritage Command, 2017).

Diversity and inclusivity. Equity theory or perceived fairness holds the belief of individuals concerned with whether they are being treated fairly (Hoy & Miskel, 2013). Individuals engage in this process through social compassion, where a comparison against others like themselves is conducted. To accomplish this analysis, the individual calculates a ratio between inputs and outputs or contributions into the system against benefits and rewards received from the system. If the results show that the ratios are balanced, the individual perceives fairness in the system; however, if the results show that the ratios are imbalanced, the individual perceives unfairness in the system. In the former situation, the individual will elect to either decrease motivation, reduce effort, or leave the job and in the latter the individual will elect to either increase motivation (Hoy & Miskel, 2013).

Discussion of the Findings for Research Question 3

RQ3 asked, what were the EMS *future* informants' perspectives, post9/11, on disaster response preparedness? The evidence was sourced (a) from five *archival* interviews with emergency management services (EMS) personnel, (b) from historical and current data on what disaster response preparedness changes have been implemented since the 9/11 attacks that impact not only the NYSMF but also the wider community, and (c) from the LIWC psychological processes using content analysis.

The subquestions were: What changes have since been implemented in response to the 9/11 terrorist attacks that impact not only the NYSMF but also the wider community? What reports were commissioned and by whom? What laws were passed? Why and where were the wars started? How have health concerns been treated? What

lessons were learned? What honors were bestowed on the NYSMF personnel who served during the 9/11 WTC attacks?

Interpretation of the results. From the future informants' development and understanding emergency managers stress training as the responsibility of the individual, the municipality, and regional levels of government. Future informants' anticipation and recommendations for forthcoming disasters incorporate improved DRP drills and anticipated acquisition of appropriate equipment. The comparative analysis of the future informants showed relativity and social domain with the most difference from the LIWC mean and the future informants' biological process domain demonstrated the least difference. The inferential statistics result showed that the null hypothesis was not rejected; there were no notable differences between the LIWC means and the past informants' means.

Implications of the findings. Learning from the past and preparing to mitigate future disasters at all levels from the individual, regional, and international. Critical architecture is defined as a systems failure that creates catastrophic loss of life, unacceptable economic outcomes, rapid failure preventing rescue response, and degradation of recovery efforts. In a joint workshop between U. S. and Russia, Prieto (2004) presented the three R's of critical infrastructure. The three R's refer to the ability for resisting, responding, and recovering from man-made or natural disaster events (Prieto, 2004). Preparing for cyber incidents, the U. S. Coast Guard put out a Safety Alert 06-19 addressing potential vulnerabilities onboard commercial vessels. Stressing segmented networks, profiles and passwords for each crewman, beware of external media, install basic antivirus software and continue core cyber protection. Organizations

within municipalities, regional areas should have standardized equipment and communications. If a WMD incident should take place in region, FEMA or like elements would have to deploy from a neighboring state, region, or another nation (McCallion, 2011; Reichart, 2009).

Bridging theory to practice. Vygotsky (1978) presented the MKO model whereby a tutor, guide, peer/college, or adult/superior or military officer with higher order skills in the form of EMTs take on the andragogical task of training NYC citizenry of in how to protect and secure their own safety in the event of another attack. The future informants, in the wake of the 9/11 attacks, took on a purpose to help others who find themselves in traumatic situations and first responders may not be readily available to come to their aid.

Seligman (1975) tapped into the benefits of positive psychology by avoid the negatives of the past and focusing instead on present and an optimistic future. Robinson (2016) spoke of learned helplessness as opposed to learned optimism. In the former, one plays the blame game by making external attributions and in the latter, the individual depends on a process called PERMA to take charge internally and develop self-perseverance to help overcome challenges of the past. In this regard, the future informants were on target by showing the NY citizenry how to be self-sufficient and resilient in times of need.

It was also evident for the literature that Huy's (2001) teaching style intervention was apparent in the future informants' approach in that it was more intangible and showed a commitment to goal achievement through training and mentoring. The teaching also advanced the concepts of shared belief in safety and security, independence, and

shared emotional energy and goal achievement as well as leaders who are skilled in psychoanalyzing followers (Huy).

Of the three sets of informants, the future informants had the proclivity to hone the socializing style of change intervention in that they were focused on forging quality relationships with the community and indulging in DRP experiential learning (Huy). This style is slow and methodological as it takes time to lay the foundation and create the deep value appreciation for followers to understand the importance of the taking care of their own safety and security. The future informants used AI as a means to transport them through the four phases of an ideal future in the midst of chaos: discovery (what is), dream (what might be), design (what should be), and destiny (what will be) (Cooperrider, 2012). They drew on both planned and improvised change or drew on bricolage to get the NYC citizens involved in their own safety and security.

The planned change process in OD, as it concerns individual effectiveness, team/group effectiveness, and organizational effectiveness, occurs only when the total system is in alignment (Harvey & Brown, 2001). On individual effectiveness in the planned change realm, leaders must ensure that they consider the "unique values, beliefs, and motivations" (Harvey & Brown, 2001, p. 46) that each employee brings to the organization to help form the organizational culture and climate. To achieve this feat, employee empowerment is a key factor. For a team/group/unit operating within the confines of the organization, leaders should let employees know that they commitment to quality and high performance will increase the competitive edge of the organization in the marketplace. At the same time, organizational leaders should aim to reduce conflicts that can lead to turbulence, conflicts, and distrust in the workspace. Finally, on

organizational effectiveness, leaders should call on tool such as climate survey to test the temperature of the entire organization to "increase the effectiveness, the efficiency, and the moral" (Harvey & Brown, 2001, p. 47) to keep the organization functioning.

Finally, dasein was also evident among the future informants in that they emphasized mitwelt in the form of sociology to engage the NYC citizen on how to function under emergency should another disaster hit the city.

Directions for Future Research

Based on the problem statement, the literature review, and the outcome of the study, directions for future research can be derived from the following:

1. Conduct interviews with women in the military specifically those present at GZ (Hagen & Carouba, 2008). and use LIWC to determine gender differences in language use. Specifically, how males and females differ in their use of words to detect the unique and gender specific approaches to DRP.

2. Use LIWC for future research studies on the 9/11 attacks at the WTC to detect gender differences in writing styles, to detect age differences in human life cycle, to detect authorship (author fingerprinting), to detect power and status (especially in politicians/public figures), and to detect personality traits, remote profiling, and emotional states (Hai-Jew, 2016/2017). LIWC could also be used for detecting suicidal ideations and deception detection (intentional lying – detecting honest works from dishonest works), as well as for setting baselines for future studies all pertaining to the 9/11 attacks on the WTC (Hai-Jew).

3. Vann, Sparks, and Baker (2017) discussed a study on emotional intelligence (EI) coupled with self leadership (SL) and stated that leaders must develop the necessary

skills to lead others in a diverse workspace through trust, decision-making, and solving problems. By combining EI and SL in a future study, leaders will develop skills in selfawareness, selfregulation, motivation, empathy, and social networks (Vann, Sparks, & Baker).

4. Incorporate social construction of fear in future studies on the DRP. Renda (2019) discussed the effects of fear on "visual spectatorship… and the undertaking of bringing together audience research and emotion sociology" (Abst., 2019) when watching suspense films such as those on the 9/11 tragedy and the epic and the successful *Boatlift* narrated by Tom Hanks. See Appendix F for a listing of such films and television movies.

5. The researcher was asked to visit the 5th Avenue Amory in the first few days following the 9/11 attacks, and was amazed at the thousands of diverse volunteers registering to help, from nurses, doctors, iron workers, truck drivers and many other type of vocational and professional civilians wanting to contribute to the greater good. The unity of spirit and sacrifice could serve as a future study focusing on the contributions of civilian volunteers.

6. As of 2016, over 37,000 people have reported developing sicknesses and or have died from cancer and other debilitating diseases as a result of working or living at or near GZ (Walters, 2016). During 9/11, OSHA was on scene conducting personal air monitoring and collected over 24,000 individual air samples (Clark, 2007). Subsequently, it was determined that the air at GZ was safe to breathe. A future study could investigate if the air at GZ, during 9/11 and the subsequent weeks, months, and years, was safe for human consumption.

7. Interview survivors on the actions of DRP personnel who saved their lives as the

planes attacked the WTC on 9/11. The description and trauma for those who saw the planes on impact into the towers and the many other different traumatic experiences as told by the evacuees (Greenall & Marselle, 2019).

8. Study the vicarious traumatization phenomenon – the psychological impact that researchers, as interviewers, experience when interacting with survivor' stress as they retell their stories (Greenall & Marselle, 2019).

9. A thought-provoking study would address the children of the 9/11 victims and deceased DRP personnel. Now as young adults, some are joining first responder departments or volunteering to join the armed services (Balsamini, Dern, & Edelman, 2019).

Assumptions, Delimitations, and Limitations of the Study

Assumptions, delimitations, and limitations are reflected in the restrictions or constraints that may affect the study's outcomes. The study assumes that situations out of the control of the researcher might be encountered (Leedy & Ormrod, 2010). Underlying assumptions are that the sample is representative of the population of informants and that the informant responded truthfully to the interview questions. The three groups of informants represented the past, present, and future. The groups, however, were not homogenous. The past informant were the victims of the 1993 bombing, the present or as addressed in the study the current informants were first responders of the NYSMF, and the future informants were emergency management professionals that provided forward looking interviews to the 9/11 Memorial organization.

The LIWC dictionary detected military-specific language used by the informants. The delimitations limited the scope and defined the boundaries set by the researcher for

the study. The study was delimited to archival interviews detailing the lived experiences faced by the past informants who were survivors of the 1993 terror attack. The challenges faced by the present informants, engaged in the NYSMF's DRP practices and not of the other first responders, the number of interviews selected for analysis, and diversity in the present informants' race/ethnicity and rank to elicit varying views in the aftermath of the attacks at GZ. The future informants brought insights into what the future holds for DRP from the perspective of NYS EMS personnel. For this study, LIWC presented no indication of any challenges in respect to detecting specific military jargon.

Limitations of CA relate to the textual data collected, difficulty in finding archives for specialized populations, easy to commit sampling bias, and the effortless ways to commit misinterpretation flaws when trying to understate the nuances of the informants' perspective (Russell, n.d.). The limitations of the study also include a lack of transferability because the sample was not randomly selected and may affect the validity and reliability of the study through selection bias (Johnson & Christensen, 2014; Leedy & Ormrod, 2010). According to Johnson and Christensen (2014) and Gay et al. (2009) for qualitative studies, the three types of validity that are of major concern are descriptive, interpretive, and theoretical validity.

Descriptive validity. The factual account or the accuracy of the phenomenon as reported by the researcher. In descriptive validity, additional observers are used to help report on participants' actions and the setting. This will permit cross-checking and agreement among the observers making the study more credible and defensible (Johnson & Christensen, 2014). No additional observers were used in this study.

Interpretive validity. The accuracy in portraying the informants' perspectives and

meanings, by providing an insider's viewpoint is what Johnson and Christensen termed interpretive validity. It is important for the researcher to understand the participants "inner worlds" and accurately present the information through the participants' lens (Johnson & Christensen, p. 300). The researcher, having been a first responder with the NYSMF, helped to ensure the informants perspectives were not embellished.

Theoretical validity. The degree to which the theoretical foundations that the study is grounded in fits the data describes theoretical validity. The theoretical relationships among the constructs must be credible and defensible. Detailed involvement is required to know how the phenomenon works and what is the phenomenon's mechanism. Theory is less definitive than interpretation and if done properly will help to accurately interpret the theory (Johnson & Christensen). The degree to which the theoretical foundations that the study is grounded in fits the data describes theoretical validity. The theoretical relationships among the constructs must be credible and defensible. Detailed involvement is required to know how the phenomenon works and what is the phenomenon's mechanism. Theory is less definitive than interpretation and if done properly will help to accurately interpret the theory (Johnson & Christensen). The study was grounded in a preponderance of theories relating to the individuals, group, and systems.

For this study, interpretive validity was most important due to the researcher's involvement in the phenomenon. Additionally, Ross (2004) declared that distance from the primary source (participants/informants) in a study is very important. If the researcher is distant, as in using secondary/archival sources, the less impactful the study will be due to the lack of intimacy with the participants and the ability to derive firsthand/eye-witness

accounts. Conversely, if the researcher is too close to the primary source, it can lead to biases. In this study, the researcher had no contact with the informants in either the selection or interviewing processes. Other forms of validity in qualitative research can be derived from "documents, films, videotapes, audio recordings, artifacts, and other "raw" or 'slice-of-life" data items" (Gay et al. (2009, p. 376). The study was absent of any artifacts other than the archival audio recordings from the past informants, a listing of 9/11 films, and insights in the DRP process from Marine Barracks, Naval Air Station Bermuda

Synthesis of the Study

RQ1. The past informants developed their own DRP. There was no interaction between the evacuees and first responders. Intelligence agencies were disjointed and remiss to not anticipate the terrorist threat. Although no infrastructure is completely secure, plans and for redundancies in structure and drills are required to maximize expeditious evacuation from buildings and other types of infrastructures. Following the 1993 bombing NYC created the OEM and located it in the new WTC to help coordinate NYC disaster operations.

RQ2. The current informants arrived at GZ on Day 1, which was in a confused and chaotic state. The OEM was created following the 1993 terrorist truck bomb attack. During the attacks at WTC on 9/11 the OEM headquarters was destroyed and in a dysfunctional state. Out of necessity, OEM relocated from Building 7 to the South Tower at the WTC, to the NYPD Police Academy, and finally ending up at Pier 92 during the initial rescue and recovery phase of the 9/11 attacks. When both towers collapsed, FDNY lost a significant portion of the on scene leadership. Early in the DRP, the WTC downfall

created a vacuum of control for the firefighters at GZ. When NYSMF arrived on scene, OEM decided to task NYSMF with security, medical and logistic operations. At that time, the NYSMF lacked the appropriate equipment and training to perform rescue and recovery work. In subsequent days, the NYSMF were exposed to toxic gases and CIS. Health concerns for the responders are still prevalent as of this date. Once again, the intelligence agencies were not congruent in organization and/or sharing of intelligence. The department of homeland security was instituted and became an integrated intelligence network (The 9/11 Commission Report, 2004). The U. S. initiated and conducted two campaigns in the Global War on Terrorism in Iraq and Afghanistan. Terrorism is global and continues to evolve. Crisis management plans are required and need to be upgraded (Wolf, 1984). Constant focus on international issues, cultures, and anticipation of the global realities is the responsibility of the municipalities, state, and federal agencies. Though honors were bestowed on the NYSMF, diversity and inclusivity of minority actors were severely lacking in media reporting and in the archival database used for this study. Anticipating future threats from artificial intelligence weapons, cyber-attacks, and WMD was identified as the new reality in terrorism and hence DRP. Although all three sets of informants were expected to abide by the laws of the land, the NYSMF were also expected to abide by military laws, conventions, and statutes including the Consolidated Laws of New York State and that of the Uniform Code of Military Justice (Consolidated Law of New York, 2019: UCMJ, 2019).

RQ3. The future informants in the form of EMTs and other medical personnel, stressed individual, municipal, state, and region training and acquisition of equipment to mitigate future disasters. Development and maintenance of critical infrastructure was

emphasized as well as desire to establish relevant and expeditious DRP for critical systems and buildings.

In developing best practices and exchange of ideas for future DRP's, Sutton (2018) established a senior leadership seminar during Fleet Week 2018. Senior leaders from San Francisco moderated a terrorist disaster table-top scenario with senior leaders of NYC. The exchange of ideas and the 9/11 lessons learned provided a best practice for DRP. The researcher was invited and participated in the seminar.

Conclusion

Empirical evidence proves crisis/DRP planning, anticipating trouble augmented with current intelligence will minimize vulnerabilities (Wolf, 1984). The NYSMF, although not trained or equipped for the 9/11 recovery effort on day one at GZ, NYSMF adopted and successfully accomplished security and logistics missions as tasked. In the analysis of the DRP, the past informants displayed a culture of survival instincts and sticking together when faced with danger. The current informants showed the American ideals under an individualist culture such as penchant for guts and grit, the influence of religious beliefs, and ideals to serve and protect. The results of the study showed that in the LIWC analysis, the NYSMF displayed less emotion compared to the past informants because their training prepared them for working in a stressful environment. The future informants exhibited a culture of caring and teaching as health professionals and presented the community spirit point of view as well as honing the individual, municipal, regional, and international training models to prepare for future DRP events.

The study brought to light DRP challenges faced by not only victims of terror attacks, but also trained first responders who also suffered the surprise attacks, from

inconsistency in leadership, lack of resources, and from the pains of ill-health as a result of the toxic fumes emitted during the attacks. This research study adds to the body of knowledge in organization leadership literature and fills a void in WTC's 1993 bombing survivors taking on leadership roles in the absence of first responders. The NYSMF, during 9/11, engaging in self leadership when critical resources were scarce or otherwise obliterated. In post9/11, Emergency Management Technicians (not to be confused with the more popular EMT's Emergency Medical Technicians/paramedics) involving the community in future DRP events through research, education, and training. By honoring the DRP heroes with intrinsic rewards, motivation and drive will enrich and organize DRP responders towards more successful missions if called on to serve.

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Appendix A

Timeline of Women's Integration in the Military

Timeline of Women's Integration in the Military

1775-1783	Served in military camps as nurses and general caretakers (laundresses, cooks). Also operated in Washington's 'Agent 355' spy ring.
1782-1783	Deborah Sampson hid her gender and served as a soldier in Washington's army disguised as her brother.
1861-1865	Served as spies, administrators, and disguised soldiers. May Edwards Walker received the only Medal of Honor for her role in the Civil War.
1846-1848	Elizabeth Newcom served in the infantry as a man in the Mexican-American War.
1866	The only documented African American woman Buffalo Soldier, Cathay William, enlisted and disguised under the pseudonym William Cathay.
1901-1908	Both the Army Nurse Corp and the Navy Nurse Corp were established by Congress.
1917-1918	Over 400 women killed in WWI. Navy Nurse Corp's Lena Sutcliffe Higbee earned the Navy Cross.
1941-1945	Approximately 400,000 women served in WWII as field intelligence agents in Office of Strategic Services (OSS), medics, ambulance drivers, pilots, mechanics, and clerks including 88 prisoners of war (POW) and 16 casualties.
1948	Women's Armed Services Integration Act passed by Congress allowing women to serve as permanent members of the armed forces (not only in war time). In 1948, racial segregation in military was outcasted and every all-Black unit were disbanded during the 1950s.
1950-1953	50,000 women served in the Korean War including army nurses forward-deployed to M. A. S. H. – Mobile Army Surgical Hospital - units and aboard ships.
1962-1972	Approximately 11,000 women deployed to the Vietnam War. Nine died in combat. Commander Elizabeth Barrett was the first woman to hold a command post in a combat zone.
1976	First women admitted to the West Point, the Naval Academy, the Coast Guard Academy, and the Air Force Academy.
1976	Women sailors and marines permitted to serve on noncombat ships.
1991-1994	41,000 service women deployed to the Middle East in the Dessert Storm operations. Also, women allowed to fly in combat missions and serve on combat ships and the DoD declared that women were excluded from roles below the brigade level.
1998	First women fighter pilots flew in the Iraqi war. Also, Captain Kathleen McGrath becomes the first woman to command a U. S. Navy ship.
2003-2009	The first Lioness teams, the lead up to the Female Engagement Teams (FET), were deployed to Iraq. The FET was established in 2009 because male soldiers were not permitted to speak to or look at local females in Iraq and Afghanistan. The women soldiers built relationships with local women. FET became the precursor to the CST – Cultural Support Teams.
2010-2011	The navy rescinds its ban on women who were now allowed to serve on submarines.
2013	The combat exclusion policy was rescinded.
2015-2016	DoD announced that all combat jobs are available to women. Women admitted to Ranger school and joins Ranger Regiment.

Source: Task & Purpose. (2017, March 8). *Timeline: A history of women in the US military*. Retrieved from https://taskandpurpose.com/timeline-history-women-us-military

Appendix B

Simulated Protocol for Content Analysis

Simulated Protocol for Content Analysis

The following ten themes with subthemes listed were sourced from the interviews as possible CA categories to explore. Also, the sourcing of the interviews and cite both interview sources.

Location: What was the NYSMF members' physical location when the news broke on 9/11? Who divulged the news to the TM or how did they know?

Orders: Who gave orders for the NYSMF member deployment to the WTC? What were the orders?

Mobility: How were the NYSMF member mobilized to WTC?

Day 1- First impressions: How did the NYSMF member describe the scene when he or she first arrived?

Subsequent days: What observations were noted on GZ by the NYSMF member? How did the days unfold for the NYSMF member?

Scene management: Who took charge of the scene according to the NYSMF member? Who did the NYSMF member say was the commander in charge? What orders did they give pertaining to the NYSMF member? How secure was the scene according to the NYSMF member? Which of the two scenes – North Tower or South Tower - was described by the NYSMF member or was it both?

Interactions – teamwork: How did the NYSMF member interact with other inter and intra team members and others on the scene (i.e. other first responders-firemen, police, politicians, media)? What was cohesiveness like according to the NYSMF member?

Challenges encountered: Did the NYSMF member have enough resources? Was technology aided or hindered according to the NYSMF member? Did the NYSMF member have enough rations?

Morbidity and health concerns: How did the NYSMF surgeon general, Rabbi, and medic react? What were the NYSMF surgeon general, Rabbi, and medic perspectives on the scene?

Closing Thoughts: What final thoughts did the NYSMF member have to impart about the WTC 9/11 attacks?

Appendix C

Linguistic Inquiry and Word Count Variables

LIWC Output Variables and Psychometric Values Categories with examples	Means	STD DEV	Alpha coefficients
Raw word counts	11921.82	10274.32	
Language variables			
Analytical thinking (formal/hierarchical)	56.34	17.58	
Clout (social status/confidence)	57.95	17.51	
Authenticity (straightforward)	49.17	20.92	
Emotional tonality (anxiety)	54.22	23.27	
Words per sentence	17.40	16.38	
Six letter words	15.6	3.76	
Dictionary words	85.18	5.36	
Linguistic dimension			
Functionality (it, to no)	51.87	5.13	
Total pronouns	15.22	3.61	
Personal pronouns	9.95	3.02	
First person singular (I, me mine)	4.99	2.46	
First person plural (we, us, our)	.72	.83	
Second person singular/plural (you, your)	1.70	1.35	
Third person singular (she/he, him, her)	1.88	1.53	
Third person plural they, their	.66	.60	
Indefinite/impersonal pronouns (it, it's, those)	5.26	1.62	
Articles (a, an, the)	6.51	1.79	
Prepositions (to, with)	12.93	2.11	
Verbs: auxiliary (am, will, have)	8.53	2.04	
Adverbs (very, really)	5.27	1.61	
Conjunctions (and, but)	5.90	1.57	
Negations (No, never)	1.66	.86	
Other Grammar			
Verbs – common (walk, went, see)	16.44	2.93	
Adjectives (free, happy)	4.49	1.30	
Comparisons (best, better, greater)	2.23	.95	
Interrogatives (Who, why, how, when, what)	1.61	.76	
Numbers (one, hundred)	2.12	2.07	
Quantifiers (few, many)	2.02	.83	
Punctuation total	21.35	9.01	
Periods	7.49	3.76	
Commas	4.75	1.94	
Colons	.64	.85	
Semicolons	.30	.53	
Question marks	.58	1.00	
Exclamation marks	1.00	1.35	
Dashes	1.19	1.38	
Question marks	1.67	1.36	
Apostrophes	2.46	4.94	
Parentheses	.53	.87	
Other punctuation marks	.73	1.70	
Psychological processes			
Affective processes (happy, cried, abandon)	5.57	1.99	
Positive emotion (love, nice, sweet)	3.67	1.63	
Negative emotion (hurt, ugly, nasty)	1.84	1.09	
Anxiety (worried, nervous, fearful)	.31	.32	
Anger (hate, kill, annoyed)	.54	.59	
Sadness (crying, grief, sad)	.41	.40	

Social processes (mate, talk)	9.74	3.98	
Family (daughter, son, husband, wife, aunt, uncle)	.44	.63	
Friends (buddy, neighbor)	.36	.40	
Human female references (adult, baby, girl, mom)	.98	1.26	
Human male references (adult, baby, boy, dad)	1.65	1.34	
Cognitive processes (cause, know, ought)	10.61	3.02	
Insight (think, know, consider)	2.16	1.08	
Causation (because, effect, hence)	1.40	.73	
Discrepancy (should, would, could)	1.44	.80	
Tentative (maybe, perhaps, guess)	2.52	1.09	
Certainty (always, never)	1.35	.70	
Differentiation (inhibition/stop, inclusive/with, exclusive/but)	2.99	1.18	
Perceptual processes (observing, heard, feeling)	2.70	1.20	
See (view, saw, seen)	1.08	.78	
Hear (listen, hearing)	.83	.62	
Feel (feels, touch)	.64	.52	
Biological processes (eat, blood, pain)	2.03	1.39	
Body (cheek, hands, spit)	.69	.64	
Health (clinic, hospital, flu, pill, medicine)	.59	.65	
Sexual (horny, love, incest)	.13	.30	
Ingestion (dish, eat, food, pizza	.57	.83	
Drives	6.93	2.03	
Affiliation (ally, friend, club, school, sorority, military)	2.05	1.28	
Achievement (win, success, better	1.30	.82	
Power (superior, bully)	2.35	1.12	
Reward (prize, benefit)	1.46	.81	
Risk (danger, doubt)	.47	.41	
Time orientations			
Past focus (ago, did, went, ran, had)	4.64	2.06	
Present focus (here, now, today)	9.96	2.08	
Future focus (will, may, soon, going to)	1.42	.90	
Relativity (area, bend, corner)	14.26	3.18	
Motion (arrive, go)	2.15	1.03	
Space (down, in)	6.89	1.96	
Time (end, until, season)	5.46	1.81	
Personal concerns			
Work (job, college majors)	2.56	1.81	
Leisure 9cook, chat, movie)	1.35	1.08	
Home (apartment, kitchen, landlord)	.55	.63	
Money (audit, cash, owe)	.68	.83	
Religion (altar, church, mosque, temple)	.28	.57	
Death (bury, coffin, kill)	.16	.29	
Informal/spoken language:	2.52	1.65	
Swear words (damn, pissed)	.21	.37	
*Netspeak/*internet shortcuts (BTW, lol, thx)	.97	1.17	
Assent (agree, yes, ok)	.95	.72	
Nonfluencies (umm, uh, er)	.54	.49	
Fillers (blah, I mean to say, ya' know)	.11	.27	

Note. Adapted from: Pennebaker, J. W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015a). *Language Inquiry and Word Count; LIWC2015 [Operator's manual].* Austin, TX: University of Texas at Austin. Pennebaker Conglomerates and Pennebaker, J. W., Boyd, R. L., Jordan, K. & Blackburn, K. (2015b). *The development and psychometric properties of LIWC2015.* Austin, TX: University of Texas at Austin. Retrieved from https://repositories.lib.utexas.edu/.../ LIWC2015_ LanguageManual.pdf doi.10.15781/T29G6Z

Appendix D

Informants' NVivo Wordles

Past Informants

Current Informants

Future Informants

Appendix E

Inferential Statistics

Inferential Statistics

ANOVA

LIWCSCORE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.702	2	.351	.068	.935
Within Groups	139.862	27	5.180		
Total	140.563	29			

Appendix F

Artistic Events on the 9/11 Tragedy

Artistic Events on the 9/11 Tragedy

Year	Title	Director
2002	*25th Hour*	Spike Lee
2002	*The Guys*	Jim Simpson
2002	*September 11*	Youssef Chahine and Sean Penn et al.
2003	*Twin Towers*	Bill Guttentag and Robert David Post
2003	*September*	Max Faberbock
2004	*Fahrenheit 9/11*	Matt Reeves
2005	*National Geographic: Inside 9/11*	Rohan Gunaratna
2005	*WTC View*	Brian Sloan
2005	*Sorry, Haters*	Jeff Stanzler
2005	*The Great New Wonderful*	Danny Leiner
2006	*WTC*	Oliver Stone
2006	*A Few Days in September*	Santiago Amigorana
2006	*The Path to 9/11*	Harvey Keietel et al
2006	*United 93*	Paul Greengrass
2006	*Inside the Twin Towers*	Richard Dale
2007	*Reign Over Me*	Mike Binder
2008	*The Reflecting Pool*	Jarek Kupsc
2009	*New York*	Kabir Khan
2009	*New Day*	Jason Williams
2009	*Pre*	Steven Tanenbaum
2010	*Remember Me*	Allen Coulter
2010	*The Space Between*	Travis Fine
2011	*Extremely Loud & Incredibly Close*	Stephen Daldry
2012	*Zero Dark Thirty*	Kathryn Bigelow
	Television movies/documentaries/Play	
2002	*9/11*	James Hanlon, Gedeon & Jules Naudet
2003	*Up From Zero*	Tim Baney an d Ann Destefano Sutherland
2004	*The Hamburg Cell*	Antonia Bird
2005	*DC 9/11; Time of Crisis*	Brian Trenchard-Smith
2005	*Flight 93: The Flight that Fought Back*	Bruce Goodison
2006	*9/11: The Falling Man*	Henry Singer
2008	*102 Minutes that Change America*	Nicole Rittenmeyer and Seth Skundick
2011	*The Love We Make (Paul McCartney Benefit Concerts)*	Bradley Kaplan and Albert Maysies
2014	*Boatlift*	Tom Hanks, Narrator
2019	*Come From Away*	Christopher Ashley, Director

Note. Source: Hansonn, T. (2014, September 30). *Films about the 9/11 tragedy.* Retrieved from https://www.imdb.com/list/ls056745046/ Keeble, A. (2017, September 11). *9/11 anniversary: Why Spike Lee's '25th hour' is the best movie about the September 11 attacks.* Retrieved from https://www.newsweek.com/911-anniversary-spike-lees-25th-hour-best-movie-about-september-11-attacks-662698 "Come From Away". (2019). *Come from away: About the show.* Retrieved from https://comefromaway.com/about.php

Appendix G

Outline for a Crisis Management Plan (CMP)

Outline for a Crisis Management Plan, Marine Barracks, Naval Air Station, Bermuda

I. General procedure to be followed to establish command and control in a crisis situation
    A. Command chain
    B. Permanent command post
    C. On scene command post
II. Specific procedures common for all crisis situations
    A. Crisis alert notifications
    B. Operations log
    C. C. Emergency triage/ first aid station
    D. Temporary morgue
    E. Press center and separate information center
    F. Recovered property storage
III. Variable threat contingencies
    A. Bomb threats
        1. General procedures
        2. Hoax telephone calls
        3. Bomb threat plan
        4. Search techniques
        5. Postal bombs
        6. Security alert system
    B. Captor/hostage procedures
        1. General procedures
        2. Crib sheet
        3. Transit from scene
        4. Arrival at destination
        5. Negotiating techniques
    C. Civil disturbance procedures
        1.Threat scenarios
        2. Types of responses
        3. Department/command augmentation to response force
    D. Skyjacking
        1. Air operation center procedures
        2. Transition procedures to captor/hostage scenario

Source: Wolf, R. L. (1984, January). Anticipating trouble. *Marine Corps Gazette* 68 (2), 18-20. Retrieved from https://books.google.com/books?id=CmZNAQAAIAAJ&pg=RA1-PA1&lpg=RA1-PA1&dq="Anticipating%2B

Appendix H

Sample Crisis Alert Notification Form

1.

Sample Crisis Alert Notification Form
Marine Barracks, Naval Air Station, Bermuda, 1977

Duty Office	**Phone**	**Time**	**Initials**

2. Officer of the day
3. Command duty officer (CDO)
    CDO will notify:
        a. Commanding officer
        b. Executive officer
        c. American counsel general
        d. Higher headquarter if directed
        e. Augmentation force (i.e. FBI)
4. Marine response force *
5. Local police *
6. Naval investigative service *
7. Dispensary
8. Crash crew *
9. Head of departments (If relevant)
10. Tenant command duty officers
11. Staff judge advocate
12. Public affairs officer

*Depends on interagency jurisdiction

Source: Wolf, R. L. (1984, January). Anticipating trouble. *Marine Corps Gazette* 68 (2), 18-20. Retrieved from https://books.google.com/books?id=CmZNAQAAIAAJ&pg=RA1-PA1&lpg=RA1-PA1&dq="Anticipating%2B