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EDITOR-IN-CHIEF

Heather R. Cotter

Editor's Note

By Heather R. Cotter, IPSA Executive Director/CEO, Founder and Editor-in-Chief

Thank you for your interest in the **Fourth Edition** of the *IPSA Journal*. This scholarly resource is available to all public safety professionals. The IPSA was fortunate to have several public safety authors and peer reviewers contribute to this executive-level, peer-reviewed publication. The *IPSA Journal* an opportunity to publish manuscripts about leadership issues and best practices applicable to all facets of public safety.

The *IPSA Journal* is for the public safety community so they can gain timely access to pertinent information that impacts decision-making, policy, administration and operations. Our readers represent the entire public safety community: law enforcement, fire service, EMS, 911 telecommunications, public works (water, sanitation, and transportation), public health, hospitals, security, private sector, and emergency management. In this Fourth Edition, readers will see the following peer-reviewed manuscripts:

1. ***Injuries in Public Safety Employees Causing Time-Loss from Work: A Systematic Review by Elisa C. Guerra and Kenneth E. Games, Indiana State University***
2. ***Vicarious Trauma in 911 and Intervention Best Practices: Examining Resilience by Jennifer E. Leftwich, Virginia Commonwealth University***
3. ***Risk Factors Related to Mass Killings in Schools: A Study of Twenty Incidents by Gregory L. Walterhouse, Bowling Green State University***
4. ***Emergency Responder Causal Reasoning Impact by Derek A. Skuzenski, PhD., and Lieutenant, New York City Sheriff's Office***

Each paper was researched by the authors, includes a literature review, offers key discussion points and they were all peer-reviewed. The IPSA has a systematic process in place for approval, rejection and resubmissions of manuscripts. The IPSA enlists peer reviewers made up of public safety practitioners and academicians with experience in scholarly writing to review all manuscripts.

It is the IPSA's vision to continually accept manuscripts and to release future editions of the *IPSA Journal*. We seek high-quality manuscripts from all public safety professionals, academia, researchers and scholars. I encourage you to download and review the IPSA Manuscript Guidelines, use the *IPSA Journal* Template and submit a manuscript to us for publication consideration. There is so much knowledge to share within and between each public safety discipline.

Stay safe,

Heather R. Cotter

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IPSA Journal

If you have any questions about the Fourth Edition of the *IPSA Journal*, any of its contents or would like to contact an author, please contact us at info@joinipsa.org.

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Injuries in Public Safety Employees Causing Time-Loss from Work: A Systematic Review

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Injuries in Public Safety Employees Causing Time-Loss from Work: A Systematic Review

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Abstract

Public safety employees regularly place themselves at risk for injury as part of their daily job requirements. Data regarding work loss injuries in this sector are inconsistent and widely variable. The purpose of this systematic review was to examine the current literature regarding lost workdays due to musculoskeletal injuries sustained on the job in public safety employees. Our initial search yielded 151 articles, and 143 met initial inclusion criteria. After screening titles, abstracts, removing duplicates and applying the exclusion criteria, 10 studies remained for review. The studies reported between 277 and 21,690 time-loss injury cases. The amount of time missed ranged from 6 to 25 workdays per injury. The literature suggests that injuries in emergency medical services personnel typically resulted in higher rates of missed work compared to firefighters and law enforcement personnel. Injuries to the low back accounted for the largest number of injuries resulting in missed work. Our systematic review found that non-fatal workplace injuries result in a substantial number of lost workdays in public safety populations. The burden of these lost workdays is multiplied given that mandatory adequate staffing requires other members of the employee's organization to work overtime in order to meet staffing minimums. Future research should focus on creating standardized injury surveillance and a reporting system for public safety personnel to more effectively track the short-term and long-term outcomes and consequences of work-related injuries.

Key Words: Injury, Firefighting, Law Enforcement, Emergency Medical Services, First Responder, Occupational Health, Low Back Pain

Introduction

Injuries incurred while on the job can be detrimental and have consequences that interfere with work, hobbies, and everyday life. Many public safety employees such as firefighters, police officers, and emergency medical service (EMS) workers have a physically demanding job and are at high risk of injury due to the nature of their job duties (Gray & Collie, 2017; LaTourrette, Loughran, & Seabury, 2008; Mechem, Dickinson, Shofer, & Jaslow, 2002; Poplin, 2012; Suyama, Rittenberger, Patterson, & Hostler, 2009). The injuries occurring are inhibiting the employees from performing their jobs and cause time lost from work (Maguire, Hunting, Guidotti, & Smith, 2005; Maguire & Smith, 2013; Mechem et al., 2002; Poplin, 2012; Suyama et al., 2009).

Back strains account for approximately 43% of injuries sustained in individuals working in physically demanding positions such as public safety occupations (Maguire et al., 2005; Maguire & Smith, 2013). Episodes of low back pain (LBP) are estimated to occur in 80-90% of the population at some point in their life (Freburger et al., 2009). The concern at hand is due to the degree of physical requirements in the job duties of those working in public safety; there is a high risk of injury (LaTourrette et al., 2008). With physical injuries, we can expect an increase in pain and a decrease in functional abilities (Gross & Battié, 2005) which can seriously affect an individual's health-related quality of life (HRQoL) (Dueñas, Ojeda, Salazar, Mico, & Failde, 2016) including at their place of work.

The 2017 annual report of the United States' firefighter injuries, estimates that 29% of all injuries were related to overexertion and strains (Evarts & Molis, 2018). Additionally, 20% of all injuries included falls, jumps or slips (Evarts & Molis, 2018). In 2017, the National Fire

Protection Association (NFPA) reports strains, sprains, and muscle pain to account for 30,970 (53%) total injuries regardless of the mechanism or physical location when they got injured.

This study focused on individuals in public safety occupations including firefighters, law enforcement officers, and first responder EMS employees such as emergency medical technicians (EMTs) and paramedics. Since public safety employees often perform high-risk job duties, (LaTourrette et al., 2008) it is essential to have regular access to occupational medical providers. Past studies have looked at injuries being a leading cause of a decreased HRQoL (Evarts & Molis, 2018; Langley, Pérez Hernández, Margarit Ferri, Ruiz Hidalgo, & Lubián López, 2011). Data collected by the NFPA (Evarts & Molis, 2018; Haynes & Molis, 2015; Hylton & Molis, 2016) demonstrates the amount of lost time on the job due to injuries is a problem. However, there are conflicting results in the current literature regarding time-loss injuries in the public safety sector. Therefore, the purpose of the current systematic review (SR) was to collectively investigate current literature to elucidate time-loss musculoskeletal injuries in the public safety sector.

Methods

Literature Search

The health-related research databases included PubMed and CINAHL (Figure 1). Keywords searched included time-loss, injury, firefighter, police, law enforcement, paramedic, EMS, and first responder. The PubMed search (Table 1) utilized the “Advanced” Boolean builder with ((firefight*) AND injury) AND lost time; (((police) OR Law enforcement) AND injury) AND lost time; (((((paramedic) OR emergency medical services) OR EMS) OR first responder) AND injury) AND lost time. For CINAHL (Table 2), we utilized the basic Boolean search term (first responders or firefighters or paramedics or police or emergency services) AND

(injury or injuries or accident or trauma) AND (lost time). After collecting all the articles from the combined searches (Table 3), we eliminated those that did not meet the original inclusion criteria. Two investigators (EG and KG) then reviewed all titles for relevance and abstracts were read to identify inclusion and exclusion criteria. After removing studies, the researchers read the remaining manuscripts for final inclusion in the SR.

Criteria for Selecting Studies

Search criteria within the electronic databases were full-text articles written in English, studying humans, and published between January 1980 and October 2018. The following characteristics were required for the study to be in this review. The population of the studies involved individuals working in the public safety occupation. Individuals were required to be of age to be a certified professional in their occupation. There were no limitations placed on gender or length of time in their career. Injuries must have occurred while on the job, and there must have been documented data on the amount of time missed from work (due to the injury).

We did not include any previous systematic reviews, meta-analyses, or abstracts in this study because our aim was to evaluate the original source data. We removed any articles that did not contain data on time lost from work due to injuries. With a goal to focus only on musculoskeletal injuries, we eliminated reports of fatalities, burns, smoke inhalation, heat exhaustion, head injuries, Post Traumatic Stress Disorder (PTSD) or other psychological disorders. Also, elimination occurred with studies that did not relate to firefighting, law enforcement, or first responder EMS job titles.

Data Extraction

We collected and read the remaining full-text articles to extract information to be used in the SR synthesis. Information was extracted from the included articles' text, tables, and figures,

and got input within an Excel spreadsheet under subject headings such as the study type, length, number of subjects, demographic data, injury details, as well as the main findings/results, and additional notes. Demographic data included the sex, age, and occupation of the participants. Other variables included the type of injury the employee incurred (i.e., sprain, strain, or fracture), the mechanism of injury, the number of workdays missed, expenses due to lost time, and additional medical care expenses.

Assessment of Methodologic Quality

Since no 'gold standard' of methodological standards exists for observational studies (Lang & Kleijnen, 2010), we did not conduct a methodological quality assessment of the included studies. All studies included in the current SR were observational.

Results

Our initial search yielded 151 articles, and 143 met the initial inclusion criteria. After removing duplicates, screening titles, and abstracts, and applying the exclusion criteria, 10 studies remained for this SR (Tables 1 and 2). Of the 10 studies included, all of them provided different information on either time lost or the number of workdays missed due to injuries. Although there was information provided on time lost, the methods of reporting this information varied from study to study and did not permit comparison. The 10 articles included in this SR were published between 1990 and 2017 and ranged in length between six months and 10 years in duration. Due to the differences in the length of the studies, there was a broad range in the total number of reported injury cases/claims for each study (304 to 2,439,624). Within these 10 studies, a total of 2,466,986 injury claims were identified (Table 4). Not all of the injuries reported resulted in time-loss. Only five of the articles discussed how many claims resulted in time-loss from work; which was a total of 22,600 cases.

The age range of the injured participants in the studies was between 16 and 65 years old; however, the most common age group was 25-45 years old. Male public safety employees reported more injuries than female employees. The studies varied considerably in the percentages of gender involved in case reports. Male employees reported anywhere between 55-98% of the injuries within the 10 included studies. From the results, it is clear that multiple mechanisms of injury occurred in public safety employees including overexertion (Maguire et al., 2005; Maguire & Smith, 2013), microtrauma (Suyama et al., 2009), lifting (Schwartz, Benson, & Jacobs, 1993), rescues, falls (Gray & Collie, 2017), physical exercise (Poplin, 2012), and assault (Mechem et al., 2002) (Table 5). Overexertion accounted for the most reported injury mechanisms that resulted in time-loss from work (Table 5). These common mechanisms resulted in several different types of musculoskeletal injuries including sprains, strains, tears, back injuries, contusions, lacerations, fractures, and punctures (Figure 2 and Table 5). Sprains, strains, and muscle tears were the most common injury reported, and of those, low back strains were the most frequent type of strain. When comparing the occupations of firefighters, law enforcement, and EMS employees, the literature suggests that injuries in EMS personnel typically resulted in higher rates of missed days from work (Figure 3).

Discussion

This SR focused on the trends of injuries incurred by public safety employees while at work. As demonstrated in both table 4 and figure 3, the most frequently documented injury details occurred in EMS workers and were identified in seven of the 10 studies used in this review (Maguire et al., 2005; Maguire & Smith, 2013; Mechem et al., 2002; Poplin, 2012; Schwartz et al., 1993; Jonathan R Studnek, Ferketich, & Crawford, 2007; Suyama et al., 2009). The second highest number of reported cases involved firefighters, which appeared in five out of

10 of the studies reviewed. Police officers and other law enforcement occupations only appeared in two of the 10 studies. This shortage tells us that it is more common to find reports on EMS and firefighters than it is to find injury reports on law enforcement officers. Perhaps this is due to differing methods of reporting injuries within each sector. It may also suggest that law enforcement officers incur fewer on-the-job time-loss injuries than other public safety professions. This SR suggests that musculoskeletal injuries are a remarkable challenge across all of the public safety occupations and have remained a challenge for thirty years (Dueñas et al., 2016; Fortune, Mustard, Etches, & Chambers, 2013; Gray & Collie, 2017; Holloway-Beth, Forst, Freels, Brandt-Rauf, & Friedman, 2016; Maguire et al., 2005; Maguire & Smith, 2013; Mechem et al., 2002; Mustard, Chambers, McLeod, Bielecky, & Smith, 2013; Poplin, 2012; Suyama et al., 2009). Although we found in this SR that first responder EMS workers such as EMTs and paramedics had higher rates of injury reports compared to the law enforcement and firefighters, it is left unknown as to why. We can only speculate hypotheses in determining the reasoning. Future research should consider comparing the modified and non-modified risk factors for EMS workers to understand better why we see a higher volume of injuries in this subsection of public safety employees.

Overexertion and strains were common in the studies discussing the mechanisms of injury (Maguire et al., 2005; Maguire & Smith, 2013; Poplin, 2012; Schwartz et al., 1993). Without proper rest, nutrition, and strength, public safety employees may be placing themselves at a higher risk of tissue and structure damage, resulting in injury (U.S. Department of Health and Human Services, 2004). The strenuous nature and unpredictable nature of employment in public safety may contribute to the musculoskeletal injuries seen in this SR (Hilyer, Brown, Sirles, & Peoples, 1990; Maguire et al., 2005; Maguire & Smith, 2013; Mechem et al., 2002;

Poplin, 2012). Although it is impossible to say from the current SR that the nature of employment in public safety is contributing to the volume of strains, sprains, and chronic pain, it does warrant future work examining the effects of cumulative stress and fatigue without a proper recovery in public safety sector employees.

As the data identifies, time-loss from work is more frequent in EMS employees compared to firefighters and law enforcement employees. There are a plethora of reasons why this could be. The literature is lacking in identifying whether EMS employees are required to have regular daily or weekly fitness training. While several departments may have their candidates (for either paramedics or firefighters) complete an initial physical abilities test (PAT) (Ellis, 2008; "EMS Physical Abilities Testing," 2019), there does not appear to be consistent regularly occurring physical assessments as part of their employment requirements like in other tactical operations professions such as the military (Smith, 2017). Perhaps one explanation for the lack of regular fitness assessment in EMS is the nature of the work. EMS teeter-totters the line between public safety and healthcare, having aspects of both as part of their job requirements. To our knowledge, there is no published data on the motivators to pursue a career in EMS. A study of this nature would reveal how the employees themselves perceive themselves and the importance of physical fitness related to their job requirements. If employees have a stronger connection with healthcare rather than public safety, this could help explain the diminished importance of physical fitness to their employment as physical fitness is not a commonly emphasized crucial skill for healthcare providers.

Missed Work & Time Lost

Paramedics and other EMS employees demonstrated to have higher rates of missed work compared to firefighters and police officers. Injury reports within the studies reviewed varied too

much to gather comparable, statistical inferences on the data for the total workdays lost due to injuries. Of the 10 studies, three of them (Hilyer et al., 1990; Maguire & Smith, 2013; Poplin, 2012) had an average of six days missed from work per injury claim, while three other studies (Maguire et al., 2005; Ryan, Breaud, Eliseo, Goto, & Mitchell, 2017; Schwartz et al., 1993) had reports ranging from 12 to 30 missed days from work per injury claim. The higher number of days missed (25-30 days) appear to be related to back strains (Schwartz et al., 1993). In regards to time-loss, five of the studies (Maguire et al., 2005; Maguire & Smith, 2013; Mechem et al., 2002; Poplin, 2012; Suyama et al., 2009) reported an average of just under 50% of their injury reports resulting in lost time from work. All these figures clearly show that there is a substantial number of days missed from work due to injuries regardless of the mechanism or cause.

What is interesting though is how we can compare these rates to athletes who get injured and miss time from practices and games. The Centers for Disease Control and Prevention (CDC) conducted a study on high school athletes and found in approximately half of the reported injuries, athletes missed an average of fewer than seven days of practices or game time (Patel, Yamasaki, & Brown, 2017). Another study conducted by the NCAA with collegiate soccer athletes from the 2004-2009 seasons, identified about 35% of reported injuries missed an average of three to six days of practices or game time, while only 10% of the injuries were causing missed practices and games for three weeks or longer (National Collegiate Athletic Association, 2013). In comparing the time lost from work due to injuries in public safety employees, with the time missed from practices or games for athletes, there is no substantial difference. There is, however, a difference in missing work versus missing an athletic event.

In most cases, there is more at stake in missing work, such as financial obligations. Just as in sports, working as a firefighter, police officer, or with EMS there are risks of injury due to

the physical duties of the job. We think the time missed from work could be reduced if more prevention programs and fitness training was required every week. Not only did the studies reviewed report information on work missed and time lost on the job due to these injuries, but other data reported included the mechanisms of injury, types of injuries incurred, and the demographics of the those injured such as average age and gender reports made. Although these findings were not directly evaluated on the relationship with the time missed from work, the information is listed below in identified sections. Further research will need to be conducted to evaluate connections between the other data reported and the time missed from work.

Injury Mechanisms

One commonly reported mechanism of injury (MOI) was overexertion, with the two Maguire et al. studies reporting 43% and 56% of their injuries caused by overexertion (Maguire et al., 2005; Maguire & Smith, 2013). This MOI is comparable to overuse and overtraining in athletes. Athletic trainers often see patients who are diagnosed with an overuse injury from repetitive trauma to the tissues of the body, or from improper technique (Patel et al., 2017). These public safety employees could be overexerting themselves due to the high demands of staffing for emergencies, and people are working overtime. When we are tired and have muscle fatigue, we are more prone to get injured (Mayo Clinic Staff, 2018). Shared risks and causes of overexertion can include a sudden increase in the intensity, duration, and volume of physical activity, poor conditioning, poor training techniques, decreased musculotendinous flexibility, and the presence of associated neuromuscular conditions (Patel et al., 2017). We feel due to these risks many firefighters, police officers, and EMS workers are experiencing overexertion and becoming injured. Falls and injuries from lifting, pushing and pulling activities were common but being assaulted was as well. Another study by Mechem et al. even got as specific as to

mention the number of assaults that occurred in paramedics versus firefighters, with paramedics assaulted in 35 (79.5%) of these incidents, and firefighters in nine (20.5%). Forty-one assaults (93.2%) occurred during patient care activities, and medical attention was sought in 36 incidents (81.8%) (Mechem et al., 2002). Assaults are also very common with police officers and other law enforcement professions (LaTourrette et al., 2008).

Many public safety employees wear a weighty amount of gear and personal protective equipment (PPE) (LaTourrette et al., 2008). This type of PPE can decrease the functional mobility, balance, and movement quality within this population and can become quite exhausting to wear. We feel there is a connection with the mechanisms of injury (overexertion, falls, lifting, and pushing) and the bulkiness and weight of the gear required to be worn by the public safety employees.

Types of Injuries

Six of the 10 studies in this review reported figures for the types of injuries sustained. Out of 4,140 injury claims accounted for in those six studies, approximately 3,843 were from strains, sprains, and tears, with the back as the most common injured body part (Hilyer et al., 1990; LaTourrette et al., 2008; Maguire et al., 2005; Maguire & Smith, 2013; Mechem et al., 2002; Poplin, 2012; Suyama et al., 2009). Nearly 93% of the injuries reported in this SR accounted for sprains, strains, and tears. Other micro traumatic injuries, contusions, fractures, and puncture wounds (Gray & Collie, 2017; Poplin, 2012; Ryan et al., 2017; Jonathan R. Studnek & Crawford, 2007; Jonathan R Studnek et al., 2007; Suyama et al., 2009) accounted for the remaining 7% (Figure 3). A 16-yearlong study performed by Hootman, et al. looked at the injury surveillance of 15 different NCAA sports teams and found that lower extremity injuries accounted for over 50% of the total reported injuries, including numerous accounts of ankle

sprains (Hootman, Dick, & Agel, 2007). Injuries to the trunk and back came in third highest with about 13.2% injuries from practice, and 10% occurred during games (Hootman et al., 2007). As we can see, sprains and strains are the most common amongst both the public safety and the collegiate athletic populations.

Limitations

No study is without its limitations. One barrier in this present SR was the limited volume of research conducted in public safety occupations explicitly addressing the challenges with occupational musculoskeletal injuries. Another limitation we encountered was the studies all had different term lengths, making comparison difficult. Additionally, comparing time-loss between disciplines was difficult due to the varying length of work shifts (8, 10, 12, and 24 hours). Lastly, there was inconsistency in how injuries were reported; many studies did not report the total days missed from work per injury.

Recommendations

Although public safety is an inherently risky occupation, there may be opportunities to reduce the risk of injury, specifically musculoskeletal injuries as a result of overexertion and strains by implementing primary, secondary, and tertiary prevention interventions in collaboration with occupational healthcare providers. In addition to future research examining the modifiable and non-modifiable risk factors to injury in public safety employees, we propose the development and analysis of primary, secondary, and tertiary prevention interventions to improve the employees' overall health and well-being while also potentially improving job performance. These interventions could include direct education, physical activity interventions, and the implementation of an embedded healthcare provider with expertise in injury prevention in the physically active.

Our SR found that non-fatal workplace injuries result in a large number of lost workdays in public safety populations. The burden of these lost workdays is multiplied given that mandatory adequate staffing requires other members of the employee's organization to work overtime in order to meet staffing minimums (Rossmann, 2017). Future work should focus on creating a reporting system, and standardized injury surveillance for public safety personnel to track more effectively the short-term and long-term outcomes and consequences of work-related injuries.

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Tables and Figures

Table 1 Database Search for PubMed

PubMed - Boolean Search Phrase	Total Found	After Search Criteria	After Title Omission
(firefight*) AND (((injury) AND lost time))	13	10	
((Police) OR law enforcement) AND (((injury) AND lost time))	17	16	15
(((((paramedic) OR emergency medical services) OR EMS) OR first responder)) AND (((injury) AND lost time))	100	96	

Table 2 Database Search for CINAHL

CINAHL - Subject Headings Search w/Boolean Operators	Total Found	After Search Criteria	After Title Omission
(first responders or firefighters or paramedics or police or emergency services) AND (injury or injuries or accident or trauma) AND lost time	21	21	10

Table 3 PubMed and CINAHL Combined Search Omissions

After Search Criteria	After Title Omission	After Duplicate Omission	After Abstract Omission	After full-text Omission
143	25	17	13	10

Table 4 Study results & demographics included in the systematic review.

First Author, Year	Length of Study (years)	# of Injury Claims	Occupation	Lost Time Reported	Work Missed Reported (days & weeks)
Gray SE (2017)	10.0	2,439,624	EMS, Firefighters, & Police		Total # of *weeks lost per 1000 covered workers:* EMS= 886.1 Firefighters= 721.7 Police= 1047.8
Hilyer JC (1990)	0.5	469	Firefighters		3000 total (days)
Maguire BJ (2005)	4.5	489	EMS professionals	277 (57%) resulted in lost time	Days lost per 100 FT workers: EMS= 19.6 Firemen= 12.9
Maguire BJ (2013)	5.0	21,690	Paramedics & EMTs	Out of 21,749 injury reports, 21,690 (99.7%) resulted in lost time	~ 50% resulted in ≥6 (days)
Mechem CC (2002)	3.0	1100	Paramedics & Firefighters	Out of 1,100 injury reports, 44 were assault, and 14 (31.8%) resulted in lost time	
Poplin GS (2012)	6.0	902	Firefighters, Paramedics, & Other	Out of 902 injuries, 271 (30%) resulted in lost time	avg = 6 (days)
Ryan KM (2017)	6.0	304	Ocean Lifeguards (first responders / rescuers)		9145 (days)
Schwartz RJ (1993)	0.5	439	EMTs		Back injuries= avg of 25 (days)
Studnek JR (2007)	7.0	641	EMS professionals		≥1 (day)
Suyama J (2009)	2.4	1,328	EMS, Firefighters, & Police	Out of 1328 injuries, 348 (26.20%) resulted in lost time Firefighters = 135 (39%) Police = 134 (38%) EMS = 79 (23%)	

Table 5 Mechanism of Injury and Injury Type

First Author, Year	Mechanism of Injury	Injury Type
Maguire BJ (2005)	119 - overexertion, 34 - transportation incidents, 36 - falls, and 8 - assaults	Sprains, strains, and tears 271 cases, 176 LWD cases, and 12.4 LWD per 100 employees Back 135 cases, 88 LWD cases, and 6.2 LWD per 100 employees Overexertion—lifting only 129 cases, 82 LWD cases, and 5.8 LWD per 100 employees
Maguire BJ (2013)	Overexertion= 12,146 (56%), falls= 2,169 (10%), transportation-related= 1,940 (9%), and assaults= 530 (2%)	Sprains or srrains 14,470 (67%), back injury 9,290 (43%), and the patient was listed as the source of injury in 7,960 (37%) cases. 59 fatalities occurred among EMTs and paramedics. Of those fatalities, 51 (86%) were transportation-related, 5 (8%) were assaults; 33 (56%) were classified as ‘‘multiple traumatic injuries.’’
Mechem CC (2002)	The 44 assaults resulted in 56 injuries, as seven employees suffered multiple injuries from the same incident. Furthermore, 5 employees were assaulted twice during the study period. The most frequent types of assault were being punched (35.7%), kicked (16.7%), and struck with an object (9.5%). Paramedics were assaulted in 35 (79.5%) of these incidents, and firefighters in 9 (20.5%). 41 assaults (93.2%) occurred during patient care activities. Medical attention was sought in 36 incidents (81.8%).	Most common types of injuries were contusions (35.7%), strains/sprains (17.9%), and scratches (12.5%).
Poplin GS (2012)	Acute overexertion= 479 (53.1 %), Physical Exercise= 297 (32.9%), Patient transport= 152 (16.9%), Training & drilling= 100 (11.1%), Fireground= 92 (10.2%), other= 261 (28.%), cutting / piercing= 88 (9.8 %), stuck btwn / caught= 75 (8.3%), Falls= 43 (4.8%).	Out of 902 injuries : sprains and strains 605 (67.1%), contusions and lacerations 168 (18.6%), Fractures 30 (3.3%), Punctures 24 (2.3%), Burns 26 (2.9%), a Other 49 (5.4%). 4.3% of injuries were classified as having some impedance of normal function (FCI 3).
Ryan KM (2017)	Of the 304 occupational injury claims, 108 (35.5%) incidents occurred during rescues, 87 (28.6%) duringnormal duties, and 31 (10.2%) during training.	Lower Extremity 104 (34.2%), Back 39 (12.8%), Shoulder 25 (8.2%), Multiple Body Parts 21 (6.9%), Torso 16 (5.3%), Hand 13 (4.3%), Neck 10 (3.3%), Arm 6 (2.0%), Elbow 2 (0.7%), Wrist 2 (0.7%), All Others 66 (21.8%).
Schwartz RJ (1993) Studnek JR (2007)	Lifting = 67%, Twisting =13%, Falling and being struck (% unknown), Ambulance collision = 18 (4.1%), Assault = 37 (8.4%),	Back injuries= 45(10.3%), stress= 49 (11%),
Suyama J (2009)	Minor trauma 1006 (75.8%), exposures to blood-borne pathogens 161 (12%), MVA 6 2(4.7%), BBP 161 (12.1%), CV 23 (1.7%), heat 13 (1%), inhalation 36 (2.7%), Gunshot 2 (<1%), & burns 17 (1.3%).	**Minor traumatic injuries = axial musculoskeletal strains and extremity injuries, (responsible for the majority of injuries resulting in missed work.) Injuries more common in a specific bureau included motor vehicle crashes and gunshot wounds (police) and cardiovascular disease, burns, and heat illness (fire).

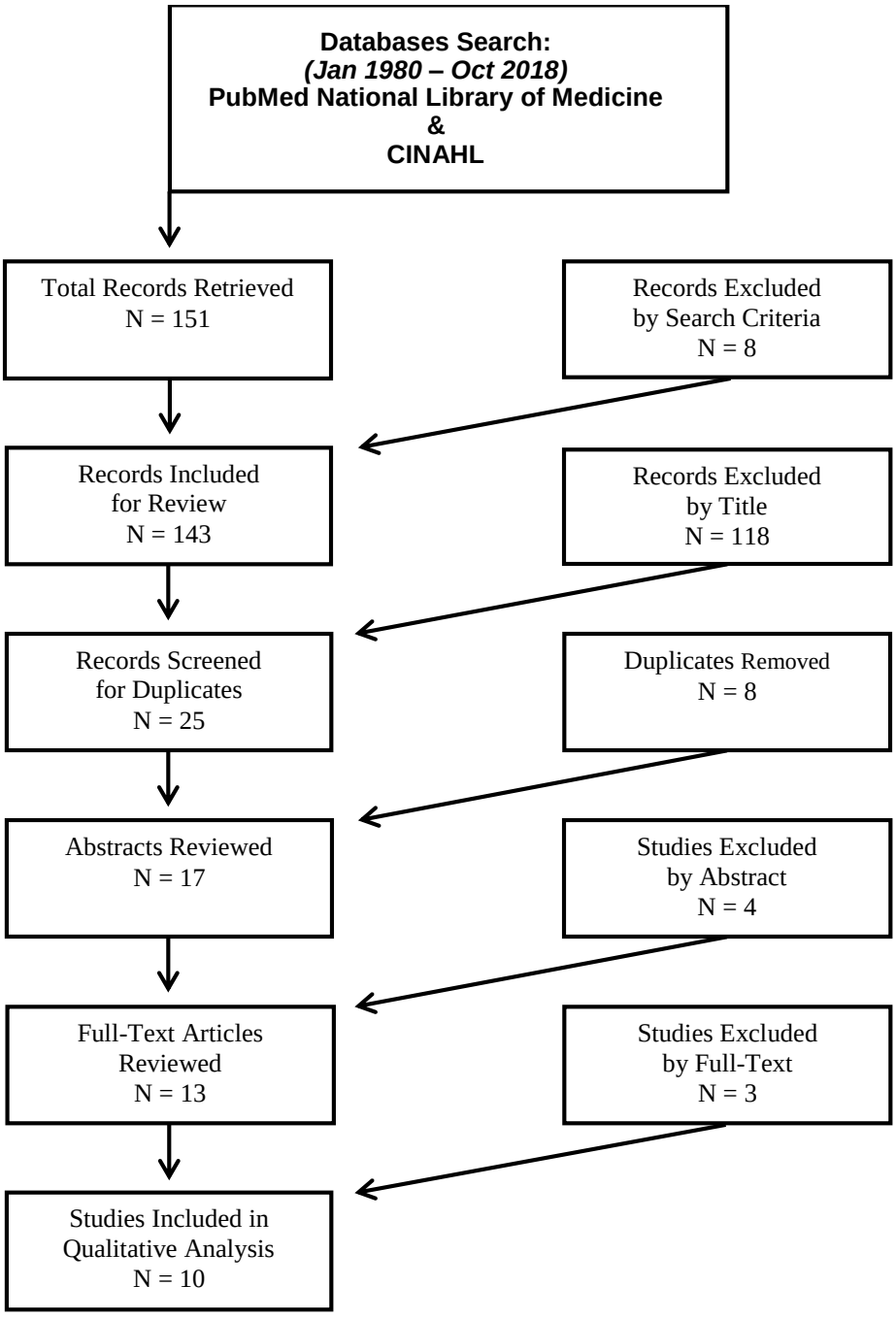

Figure 1 Flow Chart of Literature Review Search

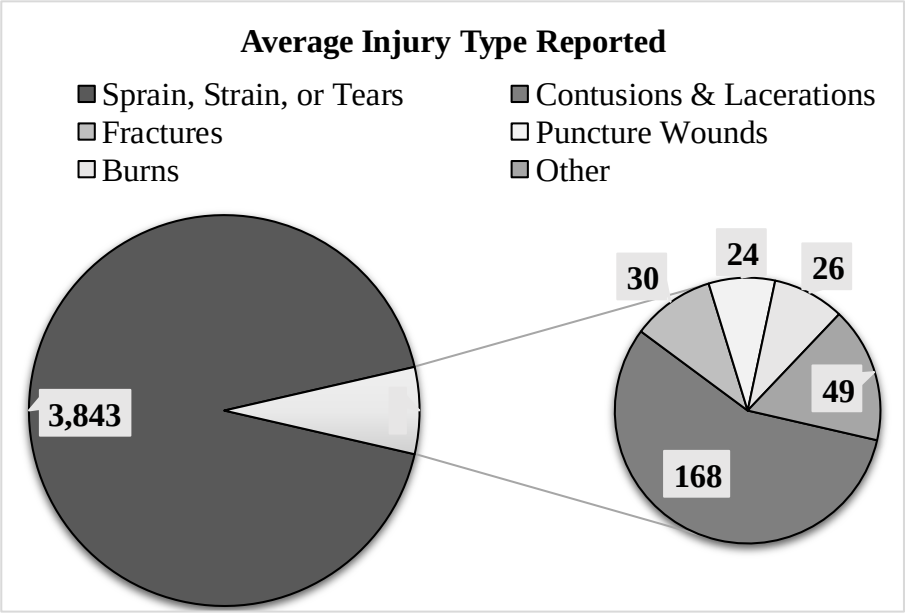

Figure 2. Average Injury Type

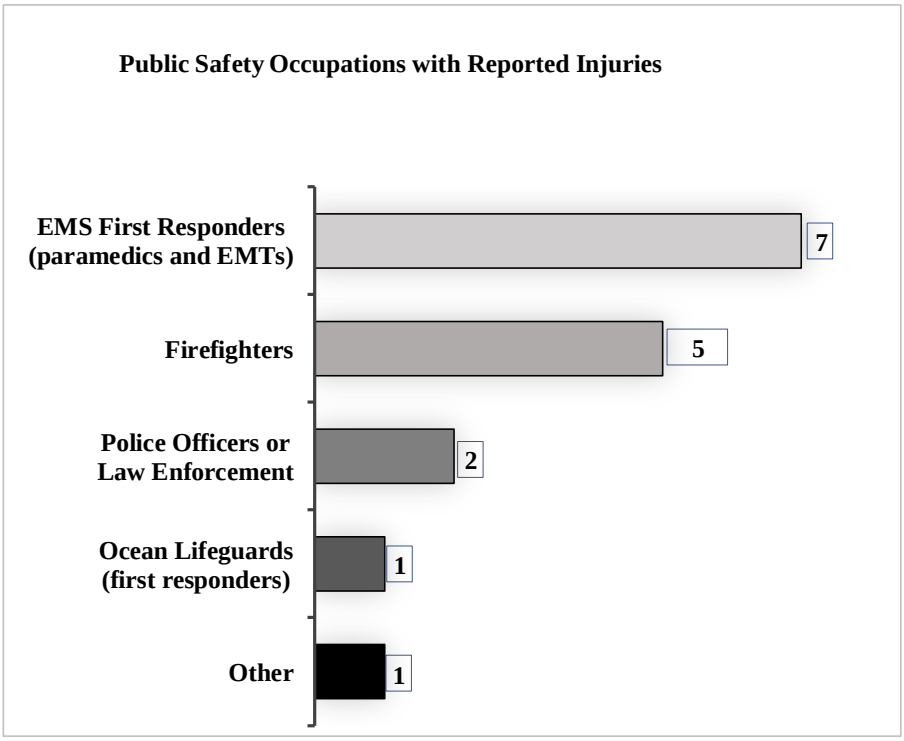

Figure 3. Number of Occupations with Reported Lost-Time from work

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Vicarious Trauma in 911 and Intervention Best Practices: Examining Resilience

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Abstract

Public Safety personnel are often at heightened risk for exposure to varying degrees of direct and indirect trauma, violence, and crisis. Behind the scenes of the on-scene personnel who respond to calls for service are 911 emergency communications officers. The 911 emergency telecommunicator and dispatcher is the rarely seen and often heard vital link between the public and field personnel and resources required for emergency assistance. The 911 telecommunicator is just as vulnerable to vicarious and secondary psychological trauma, compassion fatigue, and acute and prolonged stress as field responders are. Despite this, there is minimal empirical research concerning the etiology and epidemiology of psychological trauma and possible subsequent stress disorders within this population of Public Safety personnel. A risk and protective factors framework is examined along with an emphasis on psychological elasticity. A presentation of current best practices for stress mitigation and intervention, specifically Critical Incident Stress Management and Peer Support, is given. This literature review dictates and prescribes early intervention and assessment, Peer Support, debriefing, changes in culture to curb mental health stigma, and cognitive-behavioral and mindfulness-based trauma-informed approaches for long-term treatment. Recommendations for future research include longitudinal examinations of psychological trauma and stress in the emergency communications population, effects of new technologies on stress, and incorporating more strengths-based and posttraumatic-growth approaches to interventions, debriefings, and long-term treatment.

Key Words: 9-1-1, Public Safety, Psychological Trauma, Crisis Intervention, Peer Support

Introduction

Contemporary Public Safety continually evolves to meet perpetually changing and demanding needs of the public. Law Enforcement, Emergency Communications, Firefighting, and Emergency Medical Services agencies are cross-training and incorporating the latest technologies, methodologies, and evidence-based practices in order to provide the best emergency care. Modern increased concerns and calls for service from acts of terror, mass-casualty shootings, and natural disasters to opioid overdose and suicide epidemics highlight the need for continual training and skills advancement. With those demands come additional stress and exposure to trauma and crisis; an occupational hazard inherent in Public Safety. At present, numbers of stress disorder diagnoses and suicides are continually increasing amongst Law Enforcement, Fire, and EMS personnel (Fitch & Marshall, 2016). Amidst the chaos of emergency services and Public Safety, the rarely seen and often heard 911 emergency telecommunicator is the vital link amongst these agencies. Also referred to as Dispatchers, Call-takers, and Emergency Communications Officers, these individuals are the proverbial connective tissue amidst the skeletal framework of Public Safety and because they answer emergency calls, dispatch and maintain radio traffic, verify safety of field personnel, monitor, enter, and maintain crime information network data, and organize and dispatch appropriate resources, they are sometimes the first first-responder (Baseman, Revere, Painter, Stangenes, Lilly, Beaton, Calhoun, & Meischke, 2018). While there is significant research concerning the psychological and behavioral health of Law Enforcement and Fire/EMS personnel, there is little concerning that of those first responders under the headset (Golding, Horsfield, Davies, Egan, Jones, Raleigh, Schofield, Squires, Start, Quinn, & Cropley, 2017; Pierce & Lilly, 2012; Shakespeare-Finch, Rees, & Armstrong, 2015). While they do not provide in-person direct service for

citizens having an emergency, Emergency Communications Officers are very much present "on scene" and involved on calls for service, psychologically (Fitch & Marshall, 2016). What these professionals lack in physical presence on calls for service, they more than compensate for via cognitive and emotional involvement, interaction, and awareness. 911 telecommunicators constitute a unique population at risk for vicarious psychological trauma (also known as secondary psychological trauma) for which trauma-informed, strengths-based, and resilience-oriented intervention, advocacy, and care is essential.

Literature Review

911 Telecommunicators and Trauma Exposure

911 communications officers (ECOs) exercise a multitude of pivotal and essential roles within Public Safety. As the gatekeepers to emergency resources, they are tasked with answering non-emergency and emergency calls, controlling and directing contact with field personnel through multiple radio frequencies, maintaining data for national and state crime information networks, accessing and verifying department of motor vehicle information, and a host of other responsibilities that can have severe life-or-death and criminal justice consequences. The primary functions of the ECO are to answer and triage emergency calls for service and to maintain contact with field personnel, to ensure their safety, through the radio (Marshall & Gilman, 2015). Citizens dial 911 for a plethora of reasons. Some calls are legitimate emergencies while some are minor inconveniences perceived as emergencies. Either way, the ECO exercises compassion and concern for all emergency calls. Some calls are open-lines connected long enough for the 911 call-taker to hear a homicide-suicide on the other end, while some are hysterical young parents in need of CPR instructions because their infant is not breathing. ECOs depend solely on their visualization, listening, and hearing capabilities to

collect, ascertain, document, and disseminate critical information within seconds to responding units, and provide critical care pre-arrival instructions for emergencies. ECOs must visualize the scene combined with information from the caller which may be unclear or inaccurate (Golding et al., 2017). ECOs are tasked with interacting with traumatized individuals daily; answering and triaging emergency calls for service that expose them to violence, extreme danger, destruction, disaster, crisis, severe injury, death, abuse, and varying degrees of physical and psychological trauma (Miller, Unruh, Zhang, Liu, & Wharton, 2017). Depending on call volume, there is typically little to no time in-between calls to decompress and process emotional or acute stress responses. Emotional compartmentalization occurs in order to cope with activated stress hormones and personal well-being is set aside in order to help the citizen or field unit in need. Because of this, there are clinical implications for and concerns about the psychological and behavioral health of ECOs due to the enormous stress and pressure under which they work, and the amount of trauma to which they are exposed (Klimley, Van Hasselt, & Stripling, 2018).

Common diagnostic and symptom dynamics. ECOs experience and endure occupational stress and stress-related outcomes at rates like those of Law Enforcement (Steinkopf, Reddin, Black, Van Hasselt, & Couwels, 2018). Klimley et al. (2018) also advise that dispatchers reported higher levels of peritraumatic distress compared to Law Enforcement, and that these levels of distress were positively correlated with posttraumatic stress and compassion fatigue (secondary or vicarious traumatic stress). ECOs experience symptoms of Acute Stress Disorder and Secondary Traumatic Stress at significantly greater rates than the general population, meeting diagnostic criteria by at least nine of the required presenting symptoms (Trachik, Marks, Bowers, Scott, Olola, & Gardett, 2015). There is still minimal empirical research about diagnostic trends of vicarious/secondary traumatic stress in first

responders, let alone ECOs in specific, due to limited reporting of psychopathology, stigma, and coverage of these trends (Greinacher, Derezza-Greeven, Herzog, & Nikendei, 2019).

Greinacher et al. (2019) and the SAMHSA (2018) describe secondary psychological trauma symptoms in first responders as nearly identical to the diagnostic criteria for PTSD, while also including symptoms consistent with depression and anxiety. Posttraumatic stress disorder (PTSD) is comprised of cluster symptoms that may manifest after direct or vicarious trauma exposure, the proper diagnosis of which is dependent on symptoms stemming from a traumatic experience (Leftwich, 2018). Diagnostic criteria consist of intrusive and distressing memories of the trauma, persistent avoidance of all stimuli associated with the trauma, negative moods and cognitions, and significant hyperarousal, reactivity, and hypervigilance, all for at least one month while impairing daily functioning (American Psychiatric Association, 2013). PTSD is rooted in trauma and trauma occurs on a continuum (Leftwich, 2018). While there are clearly defined frameworks and incidents that constitute trauma (actual or threatened death and violence, witnessing death or violence, sexual violence) (American Psychiatric Association, 2013), it is best to approach trauma as an etiology from a continuum perspective (Leftwich, 2018).

Professionals who work with human pain and suffering daily, such as those in Public Safety rely on their ability to evoke compassion and empathy toward traumatic events of those they serve. Because ECOs are not physically on scene the way field personnel are, they do not have the ability to show their compassion through body language, but instead must be able to verbalize every aspect of compassionate behavior. While this brings a sense of reward and meaningfulness to the ECO, dysregulated and unchecked constant exposure to the trauma of others' lives also breeds compassion fatigue; overall exhaustion, lessened interest in the lives and well-being of others, and a precursor to total burnout (Miller et al., 2017). Such care and

commitment can become a double-edged sword. Calls for service in which ECOs frequently encounter feelings of intense fear, helplessness, or horror, and those that involve harm to a child or personal or professional relationship (such as field personnel) rank amongst the worst and most distressing of traumatic calls (Pierce & Lilly, 2012). The same cognitive-emotional skillset and energies that allow the ECO to competently perform necessary job functions that are also necessary for self-care, if gone unmanaged or un-replenished, may lead to compassion fatigue and/or burnout.

Golding et al. (2017) found that several ECOs do experience cluster symptoms associated with negative psychopathology commensurate with high levels of psychological stress, including maladaptive avoidant coping techniques and intrusive symptoms related to calls. Klimley et al. (2018) elucidate that ECOs receiving distressing calls often report cluster symptoms consistent with stress disorders, such as distressing memories of the traumatic incident, numbed or slowed reaction, irritable mood, a state of hypervigilance, poor concentration, and interrupted sleep patterns. The impacts of shift work and its, sometimes, unstable nature may also enact a harmful effect on stress management while contributing to stress disorders, whereas having a more stable and consistent schedule may be a protective factor against development of stress conditions (Trachik et al., 2015). Lilly and Allen (2015) highlight an important nuance that an ECO's most distressing call may not directly trigger PTSD and its subsequent cluster symptoms, however, symptoms may present more fully following a subsequent call that triggers new symptoms, worsening the already existing pathology. Cumulative and compounded stress is often a significant factor within this population's development of psychopathology in need of intervention and care.

***History of prior trauma*.** Allen, Mercer, and Lilly (2016) examined the importance of understanding the role of prior trauma in an ECO who has also endured duty-related vicarious trauma. Because history of childhood trauma is positively correlated with development of posttraumatic stress in adulthood following new traumatic exposure, examining already in-place coping mechanisms and scanning for maladaptive patterns is essential. Interestingly, London, Mercer, and Lilly (2017) discovered high rates of early trauma exposure to traumatic events in their research sample of this population, which reflects that possibly those who have been subject to trauma as children may want to pursue protective occupations even though they may be exposed to duty-related trauma while still overcoming non-duty-related trauma. ECOs with childhood trauma also reported greater levels of posttraumatic growth than ECOs without childhood trauma. This information could mean that ECOs with prior trauma experience may be more adept at posttraumatic growth than individuals with only adulthood trauma (London et al., 2017). Perhaps in some way, serving and protecting those who might endure the same plight is part of the posttraumatic growth process for these professionals.

Risk and Protective Factors

The very nature of emergency communications as a high-risk and stressful occupation can be a risk factor, depending on the ECOs already in-place coping methods, stress resiliency, and affect. Regardless, because ECOs must endure listening to traumatic events such as violent crimes or deaths while on the phone, they are vulnerable to developing stress disorders (Miller et al., 2017). Compounded with vicarious trauma exposure, Klimley et al. (2018, p. 40) found that ECOs were at high risk for posttraumatic stress and compassion fatigue resulting from "limited control over emergency situations, which, in turn, can decrease their internal locus of control," lack of support in the workplace, perceived low status and role confusion, and lack of education.

Marshall and Gilman (2015) highlight the concern of compassion fatigue as a risk factor not only for the health of the ECO but of the public the ECO is charged with protecting. As a result of compassion fatigue and burnout resultant from vicarious trauma, ECOs may become callous and numb to the needs of those they serve, adopting dehumanizing attitudes toward citizens (Marshall & Gilman, 2015).

Thankfully, while the risk factors are heavy and profound in number and presence, they appear to be outweighed by protective factors. Self-efficacy and positive affect in ECOs were related to overall increased psychological health and wellbeing (Klimley et al., 2018). Miller et al. (2017) highlight the need for positive affect, as an attitude of resilience plays a critical role in maintaining and developing ECO well-being and posttraumatic growth in the face of secondary trauma. Other crucial protective factors are organizational support, community and social support, stress management training, debriefing and inclusion in large-scale agency debriefings (both formal and informal such as defusing), and inclusion in employee-assistance and Peer Support programs (Miller et al., 2017; Shakespeare-Finch et al., 2015). Cannuscio, Davis, Kermis, Khan, Dupuis, and Taylor (2016) also recommend a more technological stress mitigator by encouraging better systems of triage for call types. This also highlights the importance of protections that are already in-place for medical ECOs, such as emergency medical dispatch (EMD) guide cards and instructions that are approved by and utilized under the license of the regional operating medical director. These cards provide verbatim assessment criteria and instructions for pre-arrival on which ECOs rely and are protected by. Uncertainty and unpredictability atop already traumatic calls for service exacerbate stress. This highlights the protective nature of systems like EMD protocols and departmental policies and procedures that

protect personnel and encourage confident decision-making (Forslund, Kihlgren, & Kihlgren, 2004).

ECOs are also protected from the damaging effects of traumatic stress by the posttraumatic growth found in helping people in need. Golding et al. (2017) found that ECOs enjoy their altruistic role and expressed gaining emotional intelligence and regulation while also experiencing signs of posttraumatic growth. ECOs are aware of the occupational hazards of their chosen vocation and are willing to do the necessary work anyway because of a commitment to protect others. Because the public depends so greatly on the 911 system and its personnel, protecting ECOs is not only a health issue for personnel but also extends to the health and safety of the public (Baseman et al., 2018).

Spirituality and faith. Psychological trauma does a tremendous job of forcing human beings to come face-to-face with the instability and undeniably dark aspects of existence (Currier, 2017). Trauma reminds individuals of their mortality and finite state, however, how and that individuals realize this fact is how they overcome it (Frankl, 1962). Spirituality and faith are commonly recognized protective factors for individuals, especially those healing from psychological trauma. Faith's ability to pervade even the deepest of psychological wounds and instill light has been historically documented and practiced (Tedeschi, Cann, Taku, Senol-Durak, & Calhoun, 2017). The topics of faith, religious beliefs, and spirituality are not specifically covered as phases in the debrief phases, but because CISM is holistic and functions as a person-in-environment approach, participants can openly incorporate their faith in the cognitive and emotional phase discussions. A chaplain may be present for a debriefing if requested. Peer Support teams often have an ongoing working rapport with a department chaplain, as well, and encourage personnel to rely on the strengths of their faith or spiritual practices in times of crisis

and despair. In line with the pattern of social support and Peer Support, Clifton, Torres, and Hawdon (2018) discovered that utilization of prayer and spiritual meditation as an adaptive coping mechanism was greater amongst those personnel who engaged in social support versus those who rely on stoic maladaptive mechanisms and substance use. There may be a correlation between those individuals who seek social support as protective factors and prayer, faith, and spirituality. Chopko, Facemire, Palmieri, and Schwartz (2016) also found amongst Public Safety personnel a positive relationship between faith beliefs and posttraumatic growth (PTG). PTG has long been linked to a foundation in spiritual beliefs and deeper sense of meaning making. Steinkopf et al. (2018) reflect that ECOs can transform trauma into a meaningful and positive outcome. Whether it is healing from re-triggered prior traumas due to duty-related trauma, or if the incident in question is the first trauma for the ECO, faith beliefs serve as a protective factor in the healing journey. PTG is often cultivated through a sense of resilience based in faith, spirituality, and deeper meaning and appreciation for life and paves the way for a journey of positive life changes following disaster (Joseph, 2015). Forgiveness of self and forgiveness of perpetrators are also common themes within PTG (Currier, 2017). A caveat here is that sometimes a trauma can incite a crisis of faith, in which case the beliefs of the individual are an interrupted protective factor requiring special attention from clergy, chaplains, and other leaders of the faith community of the individual. It is important to illuminate the perspective that the chaotic process of reforming as a person during crisis and trauma is not behavior that needs pathologizing. Frankl (1962) reflected that individuals' searches for a higher purpose and meaning is not a series of symptoms of something pathological but is just one significant sign of being a human; that spiritual distress is not disease.

Resilience. Joseph (2015) focalizes much of his research and message on the humanistic, person-centered, and existential lenses of behavioral theory that support human beings' ability to experience PTG. He writes of Viktor Frankl's emphasis on meaning-centered therapy and Maslow's hierarchy of needs which accounts for crisis and trauma serving as precursors to self-actualization (Joseph, 2015). While not always experienced by everyone following traumatic events, PTG on the part of the survivor should be explored within the context of competent clinical care and from a holistic, self-determination, unconditional positive regard approach. It is a deeply involved working process to never be reduced to a "everything happens for a reason" shallow attempt at consolation. PTG is the survivor's process of answering psychological trauma with emboldened identity, self-empowerment, regaining some control, deepening relationships and supports, deeper appreciation for life, cultivating new ideas and philosophies, and becoming more congruent within oneself.

Best Practices for Acute Intervention and Treatment Approaches

In terms of addressing vicarious trauma, London et al. (2017) point out the overarching necessary theme of encouraging problem-focused active coping over emotion-dysregulated avoidant coping. Trauma must be answered to or it will run amok in the psyche of the ECO and manifest in symptoms of acute stress, posttraumatic stress, and delayed onset chronic posttraumatic stress. The earlier these symptoms and behaviors can be addressed and assessed, the better. Crisis theory application is imperative at this point in the continuum of care. Comprehensive assessment through strategic models and batteries, early intervention, and mitigation of acute stress reactions through post-traumatic growth and resilience-oriented frameworks are best practice guidelines for psychological trauma in ECOs (Steinkopf et al., 2018). Ramey, Perkhounkova, Hein, Chung, and Anderson (2016) encourage the practice of

early intervention in order to empower ECOs to be aware of and modify their stress reactions, if necessary. At present, the best immediate early intervention for ECOs experiencing vicarious trauma is through peer-support one-on-ones, defusings (informal shortened versions of debriefings), or stress debriefings, all of which fall under Critical Incident Stress Management (CISM).

Stress debriefing. Critical incident stress debriefing (CISD) peer teams are Peer Support teams formed through a combination of facets that must meet training and experience requirements under the International Critical Incident Stress Foundation (ICISF) Peer Support model. CISM is a multidimensional multifaceted form of psychological first aid and crisis intervention designed to assess and address acute stress following particularly disturbing duty-related incidents. Team members can volunteer, be chosen, or are nominated, and must have their own personal experience navigating trauma, vicarious trauma, and/or stress from a critical incident. Critical incidents are defined as duty-related incidents that have the propensity to overwhelm an individual's already present healthy coping mechanisms with the potential to acquire negative stress symptoms. Team members must be able to personally and professionally empathize with another peer experiencing a similar case. CISD peer teams are backed by a licensed clinical mental health professional and operate under the clinician's license (K. Cummings, personal communication, October 4, 2018). A CISD can be requested by anyone connected to or concerned about the incident, but requests are commonly initiated by and channeled through command staff. Debriefings are conducted with a homogenous group of participants and are suited to the number of personnel in attendance. A mental health clinician and a chaplain can, and should, be present. Participants are seated in an open circle of chairs in which peer team debriefers, clinicians, chaplains, and participants can all see one another.

A CISD is a seven-phase operation consisting of the introduction, fact-finding segment, cognitive reflection, emotional reflection, reviewing of distress symptoms, trauma psychoeducation, and reentry goals (Everly & Mitchell, 1995). The introduction phase allows ground rules to be laid out, along with objectives, expectations, introducing participants, and highlights the confidentiality factor of Peer Support debriefings (Everly & Mitchell, 1995). Next, in the fact-finding phase, participants discuss the actual incident, the objective details of what occurred, where each participant was during it, and what role he or she had. This allows the group to work from a framework when discussing each participant's relationship to the incident. Phase three reviews cognitive reactions to the incident. Participants detail memories, thoughts regarding the incident, thoughts they had during the incident, and reflections from after the incident. This allows participants to personalize and own the experience (Everly & Mitchell, 1995). Phase four delves into participants' emotional reactions wherein the focus is unearthing and labeling emotions associated with the incident. The fifth phase allows participants to verbalize peritraumatic and posttraumatic symptoms they experienced or are experiencing. Phase six is comprised of psychoeducation presented by the mental health clinician. Practical and applicable information about healthy stress management and coping is taught (K. Cummings, personal communication, October 4, 2018). In the final phase, participants can ask any unsettled questions and discuss unresolved feelings and thoughts (Everly & Mitchell, 1995). Participants are also provided resource and referral information should they feel they need long-term psychotherapy or counseling (Everly & Mitchell, 1995). Debriefings are rooted in the notion that public safety personnel are resilient individuals capable of managing their stress reactions in a healthy manner through peer support, normalization of traumatic stress responses, and individual coping. Attendance at debriefings should never be mandatory, but of the ECOs

own volition, as CISD operates from and respects an individual's self-determination, autonomy, and could interrupt already existing healthy coping mechanisms by retraumatizing personnel. The overarching priority of CISM and its inherent practices are to address and asses the responses to the event that personnel are experiencing, never as a direct response to the event itself.

Peer Support as best practice. Pack (2012) found that numerous studies reflect that participants in CISD find it extremely valuable. The underlying foundation and cause for the success of CISD is its unique ability to help normalize experiences for personnel within the safety of those who understand them best: their peers. Not a standalone method of care nor a substitute for psychotherapy or long-term care, CISD's role is one piece of larger multi-system approach to the psychological health and needs of Public Safety by promoting resilience through normalization (Pack, 2012). CISD is one facet of Peer Support as larger mechanism for preemptive and responsive support.

Program models such as REACT (Recognize, Evaluate, Act, Coordinate, and Track) provide comprehensive and multidimensional modes of outreach, intervention, and support (Marks, Bowers, DePesa, Trachik, Deavers, & James, 2017). REACT is an evidence-based approach to Peer Support in the first responder population which emphasizes and works by increasing personnel's knowledge about identifying stress (acute, episodic, or chronic), encourages and perpetuates conversations about mental health, inspires peers to commit to help-seeking behavior, and provides for acute stress management (Marks et al., 2017).

Peer Support encourages social support and help-seeking behaviors while mitigating isolation and avoidance; two behaviors that only worsen trauma symptoms and increase psychopathology. Peer Support provides comfort and stabilization from a familiar source and

within the safety of a trusting relationship with a peer as a foundation for encouraging the individual in potential crisis to be referred to clinical psychotherapeutic care if necessary (Bassuk, Latta, Sember, Raja, & Richard, 2017). Peer Support teams also have the imperative opportunity to help eliminate and reshape stigma about help-seeking behavior and cultivate an agency culture committed to the same values.

Long-term psychotherapeutic modalities. Long-term trauma care for ECOs received through employee assistance programs, intra-departmental care, or other means should consist of cognitive behavioral therapy, Eye Movement Desensitization and Reprocessing (EMDR), mindfulness, relaxation, emotional regulation, and trauma-informed modalities, being sure to address any psychodynamic concerns that may arise and inhibit healing (Briere & Scott, 2015). Applying person-in-environment, holistic (biopsychosocial-spiritual), and person-centered theories to better understand behavior are helpful at the onset of care for rapport-building and accurate assessment. Practices that encourage ECOs to confront the trauma and work through their feelings and thoughts about it from a resilience-based and person-in-environment modality provide for the best outcome of healing. ECOs have a multitude of protective factors in place that further amplify the argument for the strengths-based approach, one of which is their knowledge that their job entails exposure to traumatic events. Meischke, Lilly, Beaton, Calhoun, Tu, Stangenes, Painter, Revere, and Baseman (2018) advocate for a multi-level intervention that includes mindfulness training and an organizational focus on stress reduction. This, again, ties in with working from the protective factors of Peer Support and social support and highlights the need for shift partners and supervisors to be mindful of their fellow ECOs after particularly traumatic calls or incidents. Following trauma, Briere and Scott (2015) suggest an acute assessment protocol within the therapeutic window that requires evaluating the individual's

readiness and need for care, along with confirming physical safety, suicidality, psychosis, symptoms of acute or prolonged stress, evaluation of strengths and protective factors, and chances for re-traumatization. This not only is an opportunity for stabilization and assessment, but is a chance to begin to create normalization, cohesion, reflect on strengths and protective factors, and determine any long-term care needs or referrals.

Cultural Considerations

Public Safety answering points (PSAPs) take their cultural cues from Law Enforcement which has a history of stoic mindset about emotional regulation and stigma about mental health and help-seeking (Marshall & Gilman, 2015). Public Safety culture tends to suffer from stoic mental health management and maladaptive coping (Fitch & Marshall, 2016). 911 has not been precluded from this paramilitary mindset. London et al. (2017) elucidate that within the culture of Public Safety, acknowledging mental health concerns and help-seeking behavior can be interpreted as mental weakness or may question fitness for duty. One of the benefits of Peer Support and CISD as an intervention here is that it is privileged information. The only exception to this is if individuals reveal a plan or desire to commit suicide, harm themselves or others, or that a criminal violation has occurred. While there is evidence of cultural shifts towards Public Safety reducing stigma concerning mental health, there is still progress to be accomplished. ECOs must know their mental health is a priority to superiors not solely because the public depends on their ability to work, but because ECOs are valued first and foremost as human beings.

Discussion

911 professionals have long been viewed as purely clerical and administrative personnel with no vested involvement in the day-to-day emergencies for which they provide resources.

While, currently, there is advocacy and activism taking place to improve 911's place in the family of emergency services, even the federal government does not yet classify emergency telecommunicators as protective occupations professionals; they are classified as clerical/administrative. Research paints a much different picture about the service, dedication, and commitment to the public's safety on the part of ECOs. Because of ECO's exposure to violence, death, and trauma, vicarious trauma is a legitimate concern not only for the ECO's health and well-being but the public's, by extension. Lilly and Allen (2015) reiterate that the psychopathology present in stress disorders in ECOs resulting from vicarious trauma may compromise performance. The wellness of ECOs is a public health matter and requires further long-term research with a focus on the benefits of modern technology in stress alleviation and the role of resilience in posttraumatic growth.

Limitations

The limitations of this research are primarily rooted in the fact that it is an examination of a compilation of research literature. Second, this is compounded by the fact there is limited peer-reviewed clinical research and literature regarding the varying forms of psychological trauma in ECOs, and best practices for crisis intervention and treatment. Search terms utilized included "psychological trauma," AND "secondary psychological trauma," "vicarious psychological trauma," "emergency communications," "trauma in 911," "Critical incident stress management," "peer support in emergency services," "person centered," "posttraumatic growth," and "resilience in emergency services." To bolster and expand the scope of available research, additional searches for relevant articles were completed using author names from reference lists in peer-reviewed articles as well as graduate level theses covering these topics. There is a growing collection of clinical research and advocacy for the profession's health and well-being.

This further highlights the need for expanded research and examination of patterns, trends, and determining a collection of approaches to addressing stress tolerance and mitigation, and resilience-bolstering within the population of ECOs.

Recommendations

While the growth of department and regional peer support programs and CISM teams is an aspect of public safety gaining momentum and advocacy, it must also continue to include the profession of emergency communications with an understanding of how ECOs, specifically, experience vicarious and secondary psychological trauma, compassion fatigue, burnout, depression, and stress disorders. To further bolster the protective factors of social and organizational support, ECOs experiencing symptoms of vicarious trauma should and should be encouraged to seek care through employee assistance programs, qualified psychotherapeutic care, Peer Support one-on-ones, CISD groups, and be part of a transparent development of Peer Support programs. Peer support and CISM teams should work routinely to provide preemptive as well as responsive support through resiliency-focused education, stress management psychoeducation, and ongoing rapport-building within the agency. Teams should identify and build rapport with local resources in the community and keep an ongoing register of referral information with an emphasis on a person-centered and multidimensional framework of approaches to crisis intervention and stress management. Department chaplains should be trained to not only provide competent spiritual counsel but be able to apply the lens of PTG as it relates to duty-related or duty-triggered psychological trauma. Department and agency culture should promote openness, psychological elasticity and resilience, and make ECO overall whole-person and holistic health and wellness a genuine priority. Further research into peritraumatic

factors, posttraumatic factors, resilience, stress mitigation, PTG, and best practices for intervention and long-term care in ECOs must continue.

Conclusion

911 telecommunicators are a unique population at continually heightened risk for vicarious psychological trauma for which trauma-informed, strengths-based, and resilience-oriented intervention, advocacy, and care is indicated. ECOs have historically been cast as clerical and administrative personnel with no significant relationship with the work they perform. Empirical research paints a much different picture and showcases the psychological risks and hazards inherent in emergency communications. Longitudinal examinations of psychological trauma and stress in the emergency communications population and effects of new technologies on stress should continue to be explored. Incorporating more strengths-based and posttraumatic-growth approaches to interventions, debriefings, and long-term treatment are required to meet the perpetually demanding needs of this population. An overall theme of psychological resilience and meaning-oriented support and care is indicated when assessing and addressing vicarious and secondary traumatic stress in ECOs.

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Author Biography

Jennie Leftwich is a former 911 Communications Officer for Powhatan County Public Safety Communications in central Virginia. She served as the Team Coordinator for and created the agency's own CISM/Peer Support team. She is certified CISM through UMBC and the ICISF, CIT certified, holds a Master of Arts in Trauma and Crisis Response Human Services Counseling, and is currently pursuing her Master of Clinical Social Work at Virginia Commonwealth University. Her aspirations are to obtain her L.C.S.W. with intentions to provide clinical mental health care and advocacy for the Public Safety and military veterans populations. She is also exploring the intersections of public safety and mental health/crisis services, where these groups can work together to better serve populations in need, and how they can combat stigma surrounding mental health conditions. A southern California native, she is the granddaughter, daughter, niece, sister, and spouse of Law Enforcement, EMS, and military professionals, and sees these populations as underserved and in need of culturally competent, research-driven, and meaning-oriented compassionate care and advocacy.

Risk Factors Related to Mass Killings in Schools: A Study of Twenty Incidents

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Risk Factors Related to Mass Killings in Schools: A Study of Twenty Incidents

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Abstract

To date, research has not identified a single trait or factor to identify individuals who may have the potential to commit mass violence in schools. Using document analysis and systematic review of the literature, this research examined twenty mass shooting incidents in the United States, spanning twenty years, in primary and secondary schools as well as colleges and universities, where three or more victims were killed, excluding the perpetrator. A number of risk factors were identified that are indicative of an individual's potential to commit mass violence in schools. Family factors/traits include: dysfunctional family environments including, violence, abuse and neglect, conflict or rejection in relationships, parents with mental illness, substance abuse, anti-social, criminal or violent behavior, low-income and broken homes. Individual factors/traits include: mental illness including depression and paranoia, suicidal tendencies, being a loner or socially isolated, being bullied or bullying others, substance abuse and delinquency.

Key Words: Abuse, Active Shooter, Bullying, Depression, Empathy, Family, Mass Killing, Mass Murder, Mental Illness, Poverty, School, Suicide, Mass Violence,

Introduction

School violence has been increasing in recent years. In 2014 the Federal Bureau of Investigation released *A Study of Active Shooter Incidents in the United States Between 2000 and 2013* which chronicles the findings of a study of 160 active shooter incidents. The first seven years of the study show an average of 6.4 active shooter incidents annually with 16.4 incidents annually in the later seven years. Incidents in educational facilities accounted for 24.3% of the total incidents. There is no universal definition of school violence. However, school violence is generally recognized to include disruption of the education system through verbal or physical altercations and attacks, bullying, threats and use of weapons. Violence may occur on the way to school, returning from school and at school sponsored events. Some however advocate for an expanded definition of school violence to include any acts which might harm an individual physically, psychologically or emotionally (Arrowood, 2000). As various authors use different terminology related to mass violence in schools, the terms "mass killing" and "mass murder" will be used interchangeably with "mass violence" in the paper.

According to the *Safe School Initiative Final Report* there is no accurate or useful profile of students who engaged in targeted school violence (U.S. Secret Service, 2004). Others agree that there is no single cause that is deterministic of criminal violence, but an accumulation of risk factors (Begley, 2007; Muschert, 2007; Knoll & Anna, 2016). There have been other studies conducted on the risk factors related to mass violence, however some of those studies have not been limited to just school violence, and those that were consisted of small samples for example Moore, et al., (2003) n=6, and Langman, (2014) n=10. The purpose of this study is to review the current literature and examine the history of the twenty-two perpetrators who committed twenty incidents of mass killings in schools between February 1996 and May 2018, to determine what

role if any the family environment has on creating or exacerbating risk factors of mass violence. But, can the risk factors for committing school violence be identified? I believe they can, and that the data will show that some risk factors stem from dysfunctional family environments and relationships which create or exacerbate existing individual risk factors. It is also hypothesized that the data will show that other risk factors, particularly those involving mental health, are more noticeable in the home, making it incumbent on upon family members to be alert for signs of dysfunction in their children and obtaining the necessary professional help. The final goal of this research is to provide useable data for school officials, mental health professionals, social workers, parents and law enforcement agencies in identifying students that may have the potential of committing mass killings in schools.

Literature Review

Violence in General

A number of factors have been identified for those individuals most at risk for committing violence. Studies have shown that males are more prone to violent behavior than females with 90% of deaths on school campuses the result of male perpetrators (Eisenbraun, 2007; Paolini, 2015; Begley, 2007). And, shootings are frequently perpetrated by white males (Muschert, 2007).

Early signs of youth violence: mental health. *Youth Violence: A Report of the Surgeon General* (2001) classifies violent behavior that begins before puberty as early trajectory and violent behavior that begins during adolescence as late trajectory. The report indicates that children who display violent behavior before the age of 13 typically commit a greater number of crimes, commit crime for a longer period of time, and commit more violent crimes. This is consistent with the developmental pathway reported by Verlinden (2000) where progression

from minor delinquent acts progress to more serious ones with serious interpersonal violent acts being the final set of behaviors. In a study of six school shooting incidents conducted by the National Academy of Sciences, Moore, Petrie, Braga, & McLaughlin (2005) found that of the eight perpetrators studied, five had committed prior serious delinquent acts, and the other three had exhibited minor delinquent behavior. According to the Surgeon General's report (2011) the most powerful early risk factors are involvement in general criminal offenses and substance abuse (drugs, alcohol and tobacco) before the age of 12. Minor delinquent acts include dishonesty, consuming alcohol and "soft" drugs and vandalism. Representative serious delinquent acts included: theft, guns in gun free zones, threats against others, animal cruelty and molestation.

These persistent delinquent behaviors are suggestive that these individuals may suffer from oppositional defiant disorder (ODD) which is a psychiatric disorder characterized by aggressiveness and a tendency to purposely irritate others (Virginia Commission on Youth, n.d.). Behaviors consistent with ODD include: losing one's temper, arguing with adults, defying rules, purposely irritating others, blaming others for mistakes made and being angry and spiteful. These behaviors typically manifest in the home setting with an adult typically a parent. It is also reported that ODD may be associated with attention deficit hyperactivity disorder (ADHD) and depression. Symptoms of ODD may not be apparent outside of the home making diagnosis difficult (Barry, et al., 2012). The incidence of ODD has also been associated with families of low socio-economic status. The Surgeon General's report indicates that hyperactivity, low attention and impulsiveness are individual risk factors that have a smaller effect on violent behavior, though some researchers have questioned the effect of ADHD activity disorder on violent behavior. However, Verlinden, Hersen & Thomas (2000) report that overall there appears

to be a positive relationship between hyperactivity, concentration and attention problems, impulsivity and risk taking with violent behavior.

Family risk factors. According to the Surgeon General's report there are no strong risk factors from the family domain. However, the report indicates that low socio-economic status/poverty, and anti-social parents are moderate risk factors, findings that are supported by other studies (Eisenbraun 2007; Rocque, 2012). Muschert (2007), reports that family neglect or abuse may be a factor. The report *The Impact of Abuse and Neglect on Children* (n.d.) indicates that the impact of abuse or neglect on children can result in difficulty establishing friendships, managing emotions and these children may manage emotions through fear, anxiety or aggressive outbursts. Lack of parental supervision and troubled family relationships have been found to be strong predictors of violence in children according to Verlinden, et al. (2000). And, as Moore, Petrie, Braga & McLaughlin (2003) concluded there is a failure of control mechanisms at the family level as well as community and institutional levels that led to the incidents in their study.

When parental neglect is present attachment between parent and child does not develop. John Bowlby (1944) discovered through his research that a high proportion of juvenile thieves had "affectionless" characters which he believed resulted from maternal deprivation and separation and a failure to form normal attachments in childhood. This failure results in disorders of mood, behaviors and social relationships. Attachment Theory may explain why those who commit violence often have feelings of isolation, persecution, being a misfit, lack empathy for others and are unable to feel guilt or remorse (Bowlby, 1982).

Other social factors. Social media also appears to be a factor in the decline of empathy. Research conducted by Konrath, O'Brien & Hsing (2011) found that empathy has declined overtime in college students. The authors report that low empathy can result in antisocial

consequences one example being bullying. Research indicates there is growing self-interest by Americans facilitated by social media. According to the authors even though technology and social networking may be significant contributors to the decline of empathy, all is not lost. While social media is here to stay possible interventions include time set aside daily for personal interactions with family and friends or the *Roots of Empathy* program (Schonert-Reichl, et al., 2012). This program consists of multiple structured interactions to improve empathy which has been introduced into some elementary schools and has proven to decrease aggressive behavior and increase pro-social behavior.

It is not surprising that unsupervised and neglected children have a tendency to find other sources of association be it social media or association with peers who may have deviant tendencies resulting in antisocial activities including violence and substance abuse. At least one study has found a positive relationship between associations with a deviant peer group in adolescence and later violence (Verlinden, et al., 2000). This is particularly relevant as some case studies of mass violence reveal involvement by pairs of individuals.

Mass Violence

Social loners and mental health. Knoll & Annas (2016), report that mass shootings by individuals who are seriously mentally ill are rare, but "firearm deaths by suicide account for the majority of yearly gun related deaths" (p. 98). While few with mental illness perpetuate mass murder, evidence suggests those individuals who do commit mass murder often suffer from some form of mental health disorder and are often suicidal. Knoll and Annas (2016), conclude that mass shootings are likely the result of a complex combination of factors including socio-cultural factors. The authors conclude, if disturbed individuals were "motivated to overcome long-standing, pervasive feelings of anger, persecution, revenge, and egotism rather than act on them,

they would presumably be more likely to improve their circumstances in nonviolent ways" (p. 98). Because identifying disturbed individuals with a potential to perpetuate mass murder has proven difficult, Knoll and Annas advocate that higher yield interventions are needed and may include "third-party reporting of warning behaviors or leaked intent" and increased "social and media responsibility" (p. 99). The authors opine that media coverage of mass shooting events influence the public's perception of mass murders, oversimplifies explanations, that the intense media coverage of high profile incidents are least indicative of mass killings, and the coverage of these incidents is frequent an sensational.

Moore et al., (2003) also reports that school shooters have unstable self-esteem, are *socially inadequate loners* and are perceived by others as *nerds* or *geeks* (2003, p. 305). For those perpetrators who suffer from paranoia research indicates that the paranoia exists on a continuum from paranoid traits to psychotic delusions (Knoll & Meloy, 2014). The researchers also found that paranoid perpetrators suffer from "common themes of social persecution, envy, and revenge fantasies" (p. 242). The paranoia is a special kind with the tendency to blame everyone else for their troubles and believe that life is unfair and the world is against them. This is consistent with a study by Muschert (2007) that perpetrator motivation for mass shootings is to exact revenge on the community with perpetrators equating their target schools as an attack on the community. In other words it is the statement made with violence instead of exacting revenge on particular people (Rocque, 2012).

Perpetrators are often the subject of bullying, romantic rejection and social marginalization (Muschert, 2007). According to Rocque (2012) mental illness is also a characteristic of school rampage shooters but these characteristics are similar to common characteristics of other violent juvenile offenders. Perpetrators are mostly male and feel

victimized. In six school shooting incidents studied by Moore et al., (2003) it was discovered after the incidents that six of the eight perpetrators "suffered from serious mental health problems including schizophrenia, clinical depression, and personality disorders" (2003, p. 5). In their study of nine incidents of multi-victim homicide, Verlinden et al. (2007) found that most subjects of their study had displayed uncontrolled anger, depression, threats of violence and blamed others for their problems. However, Rocque (2012) reports that mental illness is rarely recognized prior to shootings and is diagnosed after the fact.

Also, perpetrators are often suicidal. A 2004 study commissioned by the U.S. Department of Education and the Secret Service examined 31 cases with 41 shooters and found that 75 percent of the perpetrators were suicidal. The report also found that most perpetrators had difficulty coping with significant losses or personal failures, and many perpetrators felt bullied, persecuted or injured by others. Davis (n.d.), reports that many school shooters underwent prior counseling for depression, impulsivity and anti-social behavior. As reported by Cincinnati Children's (2017), depression, anxiety, substance abuse and prolonged stressful life events such as bullying and relationship issues are all risk factors for suicide. The Center for Disease Control (2014) also report research findings that youth who are victims of bullying or who have bullied others are at the highest risk of anxiety, depression and thinking about suicide. In their study of six school shooting incidents Moore et al. (2003), found that the shooters in the six incidents all had shielded themselves from physical victimization, bullying and personal humiliation. As reported by Moore et al., individuals with a history of being bullied have a "fourfold increase in criminal behavior by the time they reach their mid-20's" and tend to have poor self-esteem and social skills (2003, p. 317). Though many perpetrators of mass violence are suicidal, they often cannot bring themselves to commit suicide or desire to make a spectacle of their suicide through

violence against others. Anthony Preti has labeled this “suicide with hostile intent” (Rocque, 2012).

Family circumstances. For those who have committed mass violence in schools, family background and relationships are often dysfunctional with parents divorced or separated and parental discipline meted out in ways that are both harsh and inconsistent (Moore et al., 2003). The World Health Organization (2012), reports that there are a number of family circumstance and factors that can lead to mental health disorders in children. Among these are family violence, abuse and neglect, family conflict, low income, criminal and anti-social behavior by parents, a parent with mental illness, substance abuse by parents and families who are isolated or unsocial. In a 2007 study funded by the National Institute of Mental Health, researchers found that childhood abuse increased the lifetime risk for depression. Researchers also found that neglect, which accounts for nearly two-thirds of the substantiated cases of child maltreatment, increased the risk for current depression. Ultimately these factors can lead to an identity crisis for children. Erikson’s Theory of Psychosocial Development tells us that young adults who have identity crisis tend to be isolated, afraid to have relationships with others and see others as dangerous (Bergen, 2008). This could explain the feelings of rejection, marginalization, inferiority and paranoia that many of those who commit mass violence experience. According to James Marcia, Ph.D., clinical and developmental psychologist, these individuals are in a state of identity moratorium which is an acute state of crisis where he or she is exploring and actively searching for values to eventually call his or her own (Adelson, 1980). Marcia reports that adolescents in identity moratorium have greater levels of anxiety, lower self-esteem, lower empathy and lower ethical values, and are less cooperative with authority compared to those who are not in identity

crisis. These adolescents also tend to project aggressive feelings before retreating into fantasy. They may also be wary of both authority and peers but tend to be more cooperative with peers.

Vygotsky, advocated that children learn from interaction with peers (Vygotsky, 1997). Although Vygotsky's research focused on positive peer learning a reasonable inference can be drawn that bad behavior can be learned or reinforced by negative peer or family influences. This inference that youths may be negatively influenced by peer pressure is supported by researchers who have found that peer pressure can influence youth into juvenile delinquency, crime, and rebellion against parental authority (Esiri, 2016; Omboto, Ondiek, Odera, Ayugi, 2013; İçli & Çoban, 2012; Yavuzer, Karatus, Civildag, Gundogdu, 2014). Additionally, Yavuzer et al. (2014) found that aggression results from an interaction between the individual's self-esteem, social and emotional difficulties and peer rejection; and the environment including poverty, lack of supervision, family conflicts and limited social support.

One study brings some practical context to these theories. Langman (2014) examined ten shooters and categorized the youths as traumatized (3), psychotic (5), and psychopathic (2). However, Langman states that most youths who are traumatized, psychotic or psychopathic do not commit murder. The three traumatized youth shooters all came from broken homes with parental substance abuse and criminal behavior. Broken homes have been identified as a risk factor for delinquency. They were all physically abused and two were sexually abused. Langman found two characteristics among the traumatized youth shooters that standout. First, all three had father figures who engaged in criminal behavior using firearms and second each had peer influence to commit the attack.

The five psychotic youth shooters all suffered from schizophrenia-spectrum disorder and all came from intact families with no history of abuse. None of the subjects had been prescribed

anti-psychotic medication. Among the psychotic subjects paranoia was the most common psychotic symptom. Langman also found that psychotic subjects possess some level of paranoid thinking including grandiose delusions, auditory hallucinations, and disorganized thoughts. The subjects also had higher functioning siblings making them feel like failures within their families. All of the psychotic shooters were the youngest siblings in their families and were misfits with obvious differences between themselves their siblings, parents and teachers.

The two psychopathic youths were neither abused nor psychotic but exhibited narcissism, poor self-esteem, a lack of empathy and conscious as well as sadistic behavior. Verlinden (2000), reports that some studies have found a connection between narcissism, negative interpersonal feed-back and aggression. Langman reports that sadism is not a typical trait of psychopaths. Of interest, both psychopathic youths had a fascination with guns, lacked empathy and were successful in recruiting followers to join them in their attacks. Psychopathic shooters in general feel no emotional connection to other humans and are unable to feel guilt or remorse (Rocque, 2012).

In summary, as reported by Moore et al, adolescent killers in general have the following characteristics: "all were male, 80 percent were white, 70 percent were described as "loners,"43 percent had been bullied by others, 37 percent came from separated or divorced families, 42 percent had a history of violence, 46 percent had an arrest history, 62 percent had a substance abuse history, and 23 percent had a documented psychiatric history" (2003, p. 303).

Methodology

The methodology used for this research is document analysis and systematic review of the literature which is a qualitative research technique whereby documents are interpreted to provide context for a selected topic. Document analysis is primarily used in social science

research. Because there is no universally accepted definition of "mass killings" for the purposes of this paper a mass killing is one in which three or more people were killed in a single incident consistent with the definition of "mass killing" in the Investigative Assistance for Violent Crimes Act of 2012 (28 U.S.C. 531C(b)(1)(M)(i)). A single incident may occur at more than one geographic location. Because the Act is silent on whether to include the death of the perpetrator in the total killed in an incident, for the purposes of this paper the death of the perpetrator was not included in the total. This paper only focuses on random indiscriminate mass killing and does not include targeted murders that may have occurred in schools.

Data for this paper was obtained through internet searches of primary news sources (see Table 1). Primary news sources are those that work to develop their own news stories and are assumed to apply journalistic integrity by identifying sources and verifying facts to the extent possible. Newspapers were found to be some of the best fact related sources for this paper. To verify the veracity and reliability of the data, at least two and sometimes three sources were consulted in which the data was compared for consistency. In some instances, primary source after action reports, case study meta-analyses and psychologist notes were available.

Multiple diligent internet searches were made to ensure that all mass killing incidents occurring in schools between February 1996 and May 2018 meeting the federal definition of mass killing were included in this paper. While there is a high level of confidence that all such incidents were included any oversight that may have occurred was not intentional.

Findings and Discussion

As a point of clarification, while twenty incidents were studied there were twenty-two perpetrators, as two of the incidents Columbine High School and Thurston High School were both carried out by a pair of perpetrators. The perpetrators of the twenty incidents were evaluated

against the following traits: race, age, gender, mental health, suicidal tendencies, drug and alcohol abuse, divorced families, socially isolated, bullying or bullied, relationship issues, paranoia and delinquency.

Where and when incidents occurred. Of the twenty incidents studied six occurred in colleges or universities and fourteen occurred in primary and secondary schools broken down as follows. One incident took place in a one-room Amish school house, two in elementary schools, two in middle schools, and nine in high schools. High schools incidents account for 45% of total incidents and 64% of incidents in primary and secondary schools. High schools are the most frequent targets of mass killings both in number and percentage.

No distinct pattern relative to the month of the year in which school mass killings occur was identified. The incidents were fairly evenly dispersed across the months of the year with four months, January, July, August and September having no recorded incidents, March, June and November with one each, May and December each had two and October three. The months with the highest number of incidents were April and February with four and five incidents respectively. The months of July, August and September having no incidents is not surprising as these are the months of the typical summer vacation and September is often not a full month with classes starting after Labor Day in many locales.

The data indicates the incidents were clustered around the weekends with seven incidents on Mondays and five incidents on Fridays accounting for 60% of the total incidents. By adding the four incidents that occurred on Thursdays this accounts for 80% of the total incidents. A total of four incidents occurred on Tuesday and Wednesday with two each day. The number of incidents occurring immediately before or after the weekend could possibly be explained by family conflict that occurred over the weekend for attacks that occurred on Monday, or the

anticipation of spending the weekend in a dysfunctional family setting prompting attacks on Thursdays and Fridays. The Monday incidents could also be related to the shooter returning to an environment where he was the subject of bullying. The relationship of the weekend, bullying and other factors to the days on which school shootings occur is worthy of future study.

Gender, race and age. All of the incidents in primary and secondary schools, and all but one of the university/college incidents were perpetrated by males (95%). This is consistent with Eisenbraun (2007) who reports 90% of school shooting incidents are perpetrated by males. It was also found that 77% of the incidents were perpetrated by whites, which is consistent with the findings of Muschert (2007) who reports that school shootings are frequently perpetrated by white males. However, the reason for this has not been identified at this time. Using the U.S. Census Bureau standards on race and ethnicity as a guide, seventeen of the subjects were white, two were American Indian, two were Asian and one identified as mixed race. The age of the subjects ranged from eleven years of age to forty-five years of age with twenty-two being the average and seventeen the median. Removing the college and university incidents from the age analysis did not make significant difference resulting in a revised average age of 21.8 and a median age of 16.5 for perpetrators in primary and secondary schools.

Mental health. Because the data on mental illness was reported to investigators or the media generally by family members it is difficult to determine the number of subjects that had received or were receiving mental health treatment or if they had been prescribed medications for their condition or were taking medications as directed. However, post-incident, of the twenty-two subjects, fifteen accounting for 68% of the total were reported to have suffered from some form of mental health disorder. Nine suffered from depression, three from anxiety disorder, one from schizophrenia, and three from unspecified mental health disorders. A number of the

subjects suffered from a combination of disorders including obsessive compulsive disorder and ADHD in addition to anxiety and depression. This is consistent with the findings of Moore et al., (2003) who found 75% of the subjects in their study had some form of mental disorder with 23% having a documented psychiatric history. These findings are also supported by Rocque (2012). A number of studies have reported that mass killers suffer from depression, had received counseling for depression, and blamed others for their situations and actions (Verlinden, 2007; Davis, n.d.; Begley, 2007). Eighteen percent of the subjects in this current research suffered from paranoia. Begley (2007) reports that a majority of mass killers are not only paranoid, but suffer from a special kind of paranoia, where they blame everyone else for their troubles and believe life is unfair. Muschert (2007) indicates this can then manifest into exacting revenge on the community in the form of mass killings. Langman (2014) also found a number of the subjects in his study suffered from paranoia.

Closely related to mental illness and depression is suicide. Ten of the subjects involved in the twenty incidents committed suicide contemporaneously with their shooting incident. Of the surviving subjects, one had warning signs of being suicidal, another had attempted suicide in the past, and another had planned to commit suicide at the time of his shooting incident but did not have the courage to follow through. One other surviving subject self-reported that part of his plan was suicide by cop. A total of 64% of the subjects either committed suicide or had suicidal tendencies. Ten of these fourteen individuals (72%) were reported to suffer from mental health disorders. This is close to the findings of the U.S. Department of Education who examined 31 cases with 41 shooters and found that 75 percent of the perpetrators were suicidal. All of the subjects that did not commit suicide were arrested with the exception of one who was killed by police. It is possible that part of his plan was also suicide by cop but is not confirmed.

The data relating to suicide is supported by the findings of Rocque (2012) that many perpetrators of mass violence are suicidal. As reported by the CDC individuals who have been the subject of bullying or have bullied others, are at the highest risk for anxiety, depression and suicidal thoughts.

Family and social issues. Seven of the subjects (32%) were reported to have either been the subject of bullying or had bullied others. This is consistent with the findings of Moore et al. (2003) who found that 43% of the subjects in their study had been bullied. Muschert (2007) also reports that the perpetrators of school shootings have often been subjected to bullying. Moore et al. also reports that there is a four-fold increase of criminal behavior by the mid-twenties for those that have been bullied and can result in poor self-esteem and social skills.

Twelve (55%) of the subjects were reported to be socially isolated, socially awkward, or outcasts. Likewise twelve (55%) of the subjects were reported to have relationship problems with parents, mother specifically, father specifically, family in general or rejection by the opposite sex. At least six (27%) of the subjects were from families where divorce had occurred. Because of poor self-esteem and the absence or coping and social skills many mass killers are described as being isolated or socially awkward (Begley, 2007). And, Moore et al. found in their 2007 study that 70% of the mass killers in six incidents were described as loners. Individuals who are socially awkward or are loners may be indicative of dysfunctional families or relationship problems within the family unit. A number of parents in the current study suffered from mental illness, substance abuse, and or had violent criminal histories. Troubled family relationships are a strong predictor of violence in children (Verlinden, 2000). And, the World Health Organization (2012) reports that dysfunctional family relationships including, abuse, neglect, violence and anti-social behavior by parents can result in mental health disorders for children.

Moore et al. found in their study that 37% of perpetrators of mass school violence came from divorced or broken homes. This is close to the 27% of subjects in the current study who were from broken homes. Broken homes often lead to a lack of supervision and in some cases neglect which can lead to delinquency. Of the subjects studied here, 45% exhibited some form of delinquent behavior. This is slightly below the 63% of subjects who exhibited delinquent behavior in the study conducted by Moore et al. (2003). Minor delinquent behavior, is often a pathway to more serious and violent behavior in children (Verlinden, 2000).

In the current study two (9%) were reported to have abused alcohol or drugs. This is considerably less than the 63% of the subjects from the Moore et al. study who abused alcohol or drugs. However, as discussed previously, because substance abuse is often easy to conceal from others, particularly where there is a lack of supervision, this factor may have been underreported in this study.

Three of the subjects in this study were reported to have relatively normal family situations or were reported to be "good" kids, however in one instance the parents were reported to be overindulgent and in another there was a prior traumatic incident for which the individual apparently did not receive counseling and could have been a triggering event for her later violence. For one subject no family history could be located.

Finally, of the subjects in this study 80% exhibited three or more of the following traits: mental health issues, suicidal tendencies, drug and/or alcohol abuse, divorced families, socially isolated, bullying or bullied, relationship issues, paranoia and delinquency.

Limitations and Further Studies

Though considerable discussion was presented regarding mental health and the family environment there is no intent to stereotype or stigmatize those with mental health disorders, low socio-economic status, broken homes or any other family situation. Most individuals with mental health or family issues are not violent and do not commit murder. The limitations of this study include a relatively small sample and the reliance on secondary data sources in many cases which often did not provide complete pertinent data. Also, how documents are interpreted can be a limitation of the document review methodology because as the gap between reader and author widens there is potential for multiple perceptions and viewpoints. The Health Insurance Portability and Accountability Act, presents an obstacle and limitation to obtaining mental health records for perpetrators. While criminal trial transcripts can shed light on a number of factors this is another limitation as half of the perpetrators committed suicide and there were no criminal trials. Areas of future study could include the relationship of the weekend and the family environment to school shootings that occur at the beginning or end of the weekend, the impact of the family environment on the mental health of children in relations to school shootings and the relationship of low socio-economic status to school shootings as economic data of the subjects in this study was so limited as to make any attempt at analysis fruitless.

Theoretical and Practical Recommendations

While no single factor is indicative that an individual will commit mass violence in a school there are some factors that are strong predictors of violent behavior, of which school administrators, students, parents, mental health professionals and law enforcement officials should be familiar. These include, in no particular order: progressively serious delinquency, substance abuse, mental health disorders particularly depression, paranoia, lack of empathy,

loners and socially-isolated individuals, bullying or being bullied, suicidal tendencies and dysfunctional, abusive, neglectful and violent family situations. The following recommendations describe the actions that school officials, parents and students can take to help mitigate the potential for mass violent attacks in schools.

School Officials

- Take affirmative action to mitigate negative and deviant peer pressure
- Take affirmative action to prevent bullying and swiftly address all instances of bullying including cyber-bullying
- Institute a program to connect loner students with adult mentors in schools
- Create a school environment where all students and staff are welcoming, supportive and caring
- Recognize and provide assistance to students in need of mental health counseling
- Be particularly aware of students suffering from uncontrolled anger, depression and paranoia
- High schools must be diligent in monitoring older male students who possess any of the risk factors
- Heightened awareness is needed during February and April and Mondays, Thursdays and Fridays
- Identify students who are exhibiting signs of a substance abuse and assist families of these students to obtain the appropriate treatment
- Be educated on the warning signs of depression and suicide and assist families of students exhibiting these warning signs to obtain the appropriate treatment
- Implement empathy curriculums such as the *Roots of Empathy* program

- Report to the proper authority parents who are neglectful, violent or abusive or have mental health or substance abuse issues that are detrimental to their children

Parents

- Take affirmative action to mitigate negative and deviant peer pressure
- Report all instances of bullying to school officials or law enforcement
- Obtain mental health counseling for their children who are in need
- Obtain the appropriate counseling treatment for their children with substance abuse problems
- Be educated on the warning signs of depression and suicide and obtain help for their children exhibiting these warning signs
- Provide a supportive family environment, be a good role model, and provide adequate supervision for their children

Students

- Be educated on the warning signs of depression and suicide and report friends and fellow students exhibiting these signs to school officials or a parent
- Report instances of bullying to school officials or a parent
- Report friends or fellow students suffering from a substance abuse problem to school officials or a parent
- Report parents who are neglectful, violent or abusive to school officials or a trusted adult

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Tables & Figures

Table 1

Research Data

Perpetrator	*Race*	*Age*	*Gender*	*School*	*Source*
Barry Loukaitis	W	14	M	Middle	spokesman.com
Luke Woodham	W	16	M	High	criminal-justice.iresearchnet.com
Michael Carneal	W	14	M	High	Deadly Lessons
Andrew Golden	W	11	M	Middle	Deadly Lessons
Mitchell Johnson	W	13	M	Middle	Deadly Lessons
Dylan Kliebold	W	17	M	High	biography.com
Eric Harris	W	18	M	High	biography.com
Kip Kinkel	W	15	M	High	PBS.org
Jeffrey Weise	N	16	M	High	nytimes.com
Charles Carl Roberts IV	W	32	M	Amish	nydailynews.com
Seung Hui Cho	A	23	M	University	biography.com
Steven Kazmierczak	W	27	M	University	esquire.com
Amy Bishop	W	45	F	University	newyorker.com
Thomas "TJ" Lane	W	17	M	High	cbsnews.com
One L. Goh	A	43	M	University	nytimes.com
Adam Lanza	W	20	M	Elementary	biography.com
John Zawahri	W	23	M	College	nydailyews.com
Jaylen Fryberg	N	15	M	High	csmonitor.com
Christopher Harper-Mercer	Mixed	26	M	College	latimes.com
Kevin Janson Neal	W	43	M	Elementary	cbsnews.com
Nikolas J. Cruz	W	19	M	High	latimes.com
Dimitrios Pagourtzis	W	17	M	High	washingtonpost.com

Author Biography

Greg Walterhouse is an Assistant Teaching Professor in the Department of Political Science at Bowling Green State University and teaches in the Fire Administration and Master's in Public Administration programs. Greg holds a Bachelor of Science degree in Management from Oakland University, a Master's degree in Legal Studies from the University of Illinois and a Master's degree in Personnel Management from Central Michigan University. Greg is currently pursuing an Educational Specialist Degree in Educational Leadership at BGSU. Prior to coming to BGSU Greg had over 35 years of experience in public safety holding various positions including Fire Marshal, Fire Investigator, Fire Chief, Manager of Emergency Services, Deputy Director of Public Safety and Emergency Management/Homeland Security Coordinator. Greg is Past President of the Michigan Chapter of the International Association of Arson Investigators and is a State of Michigan certified instructor, holds the Michigan Professional Emergency Manager designation and is a Certified Fire Protection Specialist with the NFPA.

Emergency Responder Causal Reasoning Impact

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Abstract

This ethnographic and phenomenological study examined the relationship between the benefits and compensation afforded to emergency responders; their perceptions of work equity, equality, justice, and risk management; and the effect of perceived equity, equality, justice, and risk management on the execution of an emergency responder's duties. The data was collected through interviews with members of the culture group, including law enforcement officers, firefighters, and emergency medical responders (n = 24). The results of the study indicate that the benefits and compensation afforded to professionals working in this field have an impact on their perception of work equity, justice, and risk management. It was further found that these benefits do not have an impact on the perception of work equality among members of this culture group.

Key Words: Emergency Management, Police Administration, Government Administration, Public Policy, Work Equity, Public Administration

Introduction

This qualitative study was designed to develop an understanding of the perception developed by emergency responders regarding the compensation and benefits provided to them. The study specifically examined the perceptions developed regarding work equity, justice, equality, and risk management. This study also sought to examine if the developed perceptions of these situational variables has an impact on the execution of the duties assigned to members of this specific culture group, and if so what the impact is.

Resources are an essential component of production necessary for organizations to survive. Among critical resources are human resources. Motivated and capable human resources are essential for organizations. These resources are especially important within the emergency services. Law enforcement officers, firefighters, and emergency medical technicians provide a critical service to every community. Without these dedicated professionals the sustainability of societies could be questioned. However, it is essential that these professionals execute their duties in the most highly motivated and proactive manner possible. There is a current deficit of information regarding the motivating factors behind the behavior of these professionals.

Often within a community, members assume that when an emergency occurs or a disaster strikes, help will come immediately. Along with this expectation is the assumption that the professionals who arrive will angelically execute their essential duties and render aid to those in need. The fact that emergency responders have human constraints is often overlooked or disregarded. These individuals have the same human flaws and needs as everyone else within the community to which they also belong. Although the individuals are professionals working in unique environments, the emergency services are still an occupation.

The perceptions of work equity, organizational justice, job satisfaction, and organizational commitment are essential to maintain a properly motivated workforce. A properly motivated workforce is necessary to ensure a proactive approach to the execution of essential duties, rather than a more passive performance of essential duties. Emergency responders are required to respond to emergencies and based on their experience, professional judgment, and training, take action to stabilize an unstable and often ultra-hazardous environment. Although this requirement is set forth on these individuals, they do have a high level of discretion.

Literature Review

Martinko, Gundlach, and Douglas (2002) developed the causal reasoning model of counterproductive workplace behavior. This model can be used to explain how certain variables affect the process by which a person uses his or her cognitive processing to develop a perception of equity and justice. This process can be continued and be used to explain how and why one person may execute certain duties more proactively than others.

The causal reasoning model of counterproductive behavior needed to be rebuilt to fit the design of this particular study. In the original form situational variables merge with personal variables within a person's cognitive processing. If the cognitive processing leads to a perception of disequilibria, then counterproductive behavior will result, leading to either self-destructive behavior or retaliatory behavior. Under the adjusted model, the perception is tweaked to fit the needs of the given culture group under study. If the person's cognitive processing develops a perception of disequilibria, inequity, and injustice, then it will result in a passive execution of duties rather than a more proactive approach.

The adjustment in the model was necessary to fit the culture group which was under study. Adding factors such as inequity and injustice to the disequilibria perception fits into the

broader spectrum of work dissatisfaction, which assessing is the ultimate goal of this study. The other adjustment has to do with behavior. Under the original model a negative outlook will lead to counterproductive behaviors, given the culture group which is under study are emergency response professionals which must follow a paramilitary rank structure and are part of the uniformed service there is a very limited amount of counterproductive behaviors which could occur. Due to this fact there was a need for change to the model. Adjusting the model to believe that a less proactive approach to duties will result is still in line with the original model.

Under this model, personal variables were viewed as personal assets and liabilities of the individual emergency responders. Examples include family, debt, mortgages, health, marketability, level of education, and student loans. Situational variables are those related to their employment as an emergency responder. These variables include factors such as perceived danger, exposure to hazards, conflicts, health benefits, salary, schedule, time off, disability benefits, and death benefits. All of these factors affect the cognitive perception of equity, equilibria and justice for each individual emergency responder. For example, under this model a firefighter with substantial personal liabilities, such as a mortgage and children, who is not provided with adequate situational assets such as high-quality disability and death benefits and who is regularly exposed to high levels of occupational hazards, should develop a perception of disequilibria, inequity, and injustice. They are then more likely to engage in a more passive execution of their duties.

This concept is supported by past research. Caillier (2013) found a significant connection between the benefits provided by their employer and the job commitment of federal employees. Similar to Caillier's results, Jo and Shim (2015) found that work-related variables have a significant relationship with work satisfaction among a subgroup of emergency responders.

Research conducted by Olapedgba and Onuoha (2013), Swimberghe, Jones, and Darrat (2014), Piccoli and De Witte (2015), and Nisir and Bashir (2012) has created an understanding of either the causes of job satisfaction, organizational commitment, or organizational justice; or examined the challenges associated with work in the emergency services on human motivation and behavior, however none have yet put these variables together in a study.

It has been proven through previous research that performance without recognition can be detrimental to the organizational goals of an agency (Kiruja & Mukuru, 2018). Jayaweera (2015) found that work environmental conditions have a significant impact on work performance and employee motivation. Both physical and psychological environmental factors have an impact on an employee's perception of work equity and in-turn their performance (Jayaweera, 2015).

Previous research has been conducted in similar areas as this current research, however of other culture groups. Kuranchie-Mensah & Amponsah-Tawiah (2016) conducted a similar study amongst a different type of group of people who have a similar high-risk field of employment. This study focused on a group of mine workers. Mine workers face a high rate of mortality and workplace injury, just as emergency responders do. The findings of this study indicate that motivation is an important component of this similar work field. The researcher's recommendations are for management to ensure that their employees are highly motivated (Kuranchie-Mensah & Amponsah-Tawiah, 2016). Having highly motivated employees was found to be associated with policy compliance, especially with those related to safety, health, and wellness (Kuranchie-Mensah & Amponsah-Tawiah, 2016).

Discussion

Human behavior, human motivation, and organizational policy were at the forefront of this study. The framework for this study was based on two theories. These theories were the

human resource theory, specifically on Maslow's hierarchy of needs, as well as the resource dependence perspective. The hierarchy of needs theory explains the factors behind human behavior and motivation (Cao et al., 2013; Lester, 2013). The resource dependence perspective explains that the need for resources controls an organization's procedures and policies (Chisholm, Weech-Maldonado, Landry, & Epané, 2015).

The hierarchy of needs is a theory that breaks human needs into five categories, ordered by level of importance. The first category is composed of physiological needs, such as the need to sleep and eat. If these needs are not met than any other needs are irrelevant (Lester, 2013). The next level of needs is safety and security, and then belongingness, esteem, and finally self-actualization (Cao et al., 2013). Maslow proposed that the greater the level of needs are satisfied, the stronger the psychological and physical health of the individual will be (Lester, 2013). Following this theory, a person's behavior should be predictable as they will act in a way which will most satisfy all of their needs (Thielke et al., 2012).

> "Performance of behaviors aimed at satisfying the current relevant need will continue until that need is accomplished, at which point the next level is addressed. People shift back and forth between needs over time, depending on circumstances. Lower-order needs have a higher intrinsic relevance, and thus stronger short-term effects on behavior, than higher-level needs: people will more aggressively and consistently seek out food and shelter than opportunities to be creative" (Thielke et al., 2012, pp. 473-474).

This theory can be used to explain why individuals seek and maintain employment, how they motivate, and could dictate the way they execute their duties.

Resource dependence theory is focused on the sustainability of organizations, setting forth the principle that every organization can determine its own level of sustainability

(Chisholm et al., 2015). A major aspect of this theory is that organizations will have to negotiate exchanges with other organizations to secure needed resources (Chisholm et al., 2015). Under this theory organizations will be motivated to acquire sufficient resources to ensure long-term sustainability, and independence (Chisholm et al., 2015). For example, a city will require human resources to staff their police departments and fire departments; therefore, they negotiate an exchange of resources with the police and fire labor unions. Additionally, individual emergency responders require resources such as monetary income and health benefits; therefore, they negotiate an exchange with the city. Following this theory, each party will attempt to obtain the greatest resources from the other to ensure their personal sustainability and lessen their dependence on the other.

The design is a blend of ethnography and phenomenology. Ethnography views a phenomenon through the lens of a specific culture group (Gill, 2014). Phenomenology studies a phenomenon through those who have lived it, with a focus on their individual experiences (Gill, 2014). Phenomenology and ethnography were blended in this study because combining these two methodologies best answered the two research questions. The research questions were centered on a specific culture group. The researcher sought to develop an understanding of how members of this culture group develop perceptions, and the effect on their behaviors. The study data were obtained phenomenologically through the lived experiences of those in the culture group; specifically, through interviewing emergency responders regarding their perception of work equity and justice, and how they believed it affected the way in which they executed their duties.

The target population for this study included ten law enforcement officers, ten firefighters, and ten emergency medical service responders. Due to logistical limitations the final

study population was ten law enforcement officers, one emergency medical technician, two firefighters, and 11 individuals who are both firefighters and emergency medical service responders. Although the final study population only included 24 individual emergency responders, the target goal was met for the law enforcement category and exceeded for the firefighter and emergency medical service categories. All of the emergency responders interviewed all serve or have served within New York City or have served for a local municipality in the suburbs adjoining New York City.

This study population was chosen for several reasons. Emergency responders working in the New York Metropolitan area are composed of a very diverse population. Queens County, one of the counties of New York City is the most diverse county in the world. The researcher believed that this diversity would be beneficial to the study. In addition, having a cross population from various agencies within the same geographic area adds a level of diversity to the study, while still following the same social and agency norms.

Law Enforcement Officers The ten law enforcement officers utilized for this study are all actively serving. They all work within New York City. Each of the law enforcement officers work in the same borough of the city, which is Brooklyn. Brooklyn is the most populated borough within New York City and yet is not geographically the largest. These factors make Brooklyn one of the most challenging areas to work in emergency services.

Of the 10 officers interviewed seven were males and three were females. The years of service of the officers ranged from 1.5 years to 30 years, with an average of 9.55 years of service in law enforcement. Only one of the officers have a level of formal education lower than a bachelor's degree, seven have bachelor's degrees and two have graduate degrees. Nine of the officers are operations level officers who work in the field, one is a mid-level manager who splits

her time between field work and administrative work. Four of the officers have children and six do not.

Four of the officers interviewed identify as Caucasian, two as Black, three as Hispanic, one as Asian, and none as mixed-race or other. With regards to age, four of the officers are in their twenties, three are in their thirties, one is in their forties, and two are in their fifties. The officers living situation is as follows, five officers own their own home, three rent an apartment or house, and two currently live in a family member's house.

Firefighters The study utilized 13 firefighters for the sample population. All of the firefighters utilized in the sample population are volunteer firefighters who work in a suburb adjoining New York City. Eleven of the firefighters utilized in this sample population additionally work as emergency medical responders. These firefighters are from three different fire departments within Nassau County. Twelve of the firefighters interviewed are male and one is female. Ten of the firefighters are still active responders and three are former firefighters recently departed from service.

The length of service for these firefighters ranged from two years to 13 years, with an average length of service of 8.23 years. Two of the firefighters have not yet earned a bachelor's degrees, three have earned bachelor degrees, two are working on graduate degrees, five have earned master's degrees and one has earned a professional doctorate. Ten work at the basic operations level and three work in mid-level management; but all respond to fire and emergency scenes, none are strictly administrative. Only one of the firefighters has children.

With regards to age all the firefighters are either in their twenties or thirties. Eleven of which are in their twenties, and two are in their thirties. Three of the firefighters own their own home, four rent either a house or apartment, and six live in a family member's home. Nine of the

firefighters identify as Caucasian, one identifies as black, one identifies as Hispanic, none identify as Asian, and two identify as mixed-race.

Emergency Medical Responders Twelve of the emergency medical service responders are additionally firefighters, and one is solely an emergency medical responder. Two of the responders are females and ten are males. Five of the responders are or where paid career providers, two worked as both a volunteer and paid provider and five are strictly volunteer providers. Three of the responders work or have worked in New York City, and nine work or have worked in Nassau County, a county adjoining New York City. These responders work for eight different agencies. Four of the responders are still active and eight have recently departed from service. Nine of the responders interviewed are emergency medical technicians at the basic level, one is at the paramedic level, and two operate as ambulance drivers only.

The responders interviewed range in years of service from one year to 11 years. The average length of service for the responders interviewed is 5.45 years. Two of the responders work at the middle management level, and ten work as field or operations level responders. One of the emergency medical service providers is in the process of earning a bachelor's degree, three have bachelor's degrees, three are in the process of earning a master's degree, and five have a master's degree.

With regards to race, ten of the emergency medical responders identify as Caucasian and one identifies as Hispanic. None of the emergency medical responders in this sample group identifies as Black, Asian, or a mixed-race. Regarding age, ten of the emergency medical responders are in their twenties, and two are in their thirties. Four of the emergency medical responders own their own homes, three rent, and four are currently residing in a family member's home.

The data for this study was collected solely from in-person interviews with members of the culture group of emergency responders. The target population for this study was 30, being composed of ten emergency responders from each of the three subgroups of emergency responders. The study's final sample population was composed of ten law enforcement officers, 12 emergency medical service responders, and 13 firefighters. The population was composed of 24 individual responders as 11 of the firefighters in the sample group were additionally used in the emergency medical service sample group. This is because many of these responders act in a dual role as both firefighters and emergency medical responders.

Each participant was interviewed one time. The interviews took place from May 24, 2016 through June 12, 2016. The locations of the interviews differed depending on the preference of the study participant, but none of which occurred in their workplace. The interviews were audio recorded and the researcher took hand notes during the interviews. After each interview they were manually transcribed. After the data analysis phase each of the study participants could member check the data analysis. Member checking is a process where study participants review the analyzed data to ensure accuracy. All of the participants positively accepted the research analysis. There were no unusual incidents or occurrences during the data collection phase.

The data from the interviews was from the interviews and the notes recorded during the interviews and a spread sheet was created for each emergency responder subgroup. Creating these spread sheets eased data organization and display, which then eased data preliminary data analysis, as well as facilitated the emergence of common themes.

It was found that all the law enforcement officers found their job to be hazardous or very hazardous. Seven emergency medical responders stated that they find their job hazardous or very hazardous, and five stated that their duties can be hazardous at times or that they would consider

their occupation to have a low hazard level. Variables such as role, level of service, and years of service did not seem to impact an emergency medical responder's perception of danger. The division between paid versus volunteer responders was randomly mixed in this category as well; as was it between those that are still active and those that have recently departed service. One responder who is both an emergency medical technician and firefighter stated that "with regards to EMS I think it would be rare to sustain a life threatening injury like with the fire service or law enforcement, but in comparison to those fields it is much more common to sustain a career ending injury."

Eleven of the 13 firefighters interviewed stated that they find their duties hazardous and two stated that they find their duties somewhat hazardous. Both of the firefighters who stated that they find their duties somewhat hazardous have similar demographics as both are males, are still active, have more than five years of service, are basic operations level staff and do not have any children or other assets or liabilities. This similar demographic can also be seen among firefighters who did report their perception of work-related hazards to be high.

Law Enforcement Officers Perception of Equity and Justice Seven of the law enforcement officers stated that they do not think that their benefits are fair or equitable compared to the tasks and duties which they are assigned. One officer stated that they have mixed feelings as to the fairness and equity of their compensation. Two of the officers stated that they think the pay and benefits are fair, however one of those officers did state that they have acquired their own private disability insurance. He believes he needs this coverage because he would not be able to maintain his quality of life if he ever sustained a line of duty injury because he is reliant on a side job and overtime which he would not get if he were injured. He does

however feel as if his medical expenses would be covered and he would still receive his base pay.

The two officers that stated that they believe their relationship with the city is fair and equitable share common themes with each other. Both are males at the basic operations level who believe that their job is very hazardous. Both have bachelor's degrees and have less than five years of service. Neither have children, but both have assets and liabilities which they are responsible for. The two officers also stated that they believe that others feel as if their job is not fair or equitable. Two other officers stated that they are not sure how others feel. All of the remaining officers stated that they believe that others in the same field are dissatisfied with their benefits and compensation and feel as if there is an inequitable and unfair relationship.

Four officers stated that their perception of inequity and injustice does impact the way in which they execute their duties. Two officers stated that their perception does somewhat or sometimes impact the way they perform their duties. Four officers stated that their perception, although negative, does not impact the way in which they carry out their duties. Of the officers who stated that their duties are not impacted by their perception in-depth responses included statements such as "I knew what kind of career field I was getting into" and "we don't do it for the money or benefits, we do it because we want to help."

Firefighters Perception of Equity and Justice Ten of the thirteen firefighters are still active. One of those that has departed from service cited an inequitable relationship as his reason for leaving, the two others stated that they had to leave because they moved, as they could no longer afford to live in the area where they grew up. Two of the 13 firefighters stated that they do not find the benefits provided to be unjust, and three stated that they have mixed feelings on the topic. The remaining firefighters stated that they believe that they should be entitled to higher

levels of coverage, one stated that he had to obtain his own private disability insurance in case he sustained in injury while working as a firefighter. Of the two firefighters that stated that they are not dissatisfied with their level of coverage provided by the fire department, both are males, still active, and neither has children; aside from these variables the two emergency responders do not have any other common variables as their years of service, assets and liabilities, and level of formal education differ.

One of the two firefighters who stated that they are not dissatisfied with their coverage stated that they believe that others are satisfied with their coverage and the other stated that he believes that others are not satisfied with their coverage. One firefighter who has mixed feelings stated that they do not believe others feel that there is an unjust or inequitable relationship with the department and their benefits.

Only two of the firefighters who believe that their coverage is unjust and inequitable believe that it impacts the way in which they execute their duties. These firefighters have different attributes, as one is a male at the middle management level with 11 years of service, and the other is a female at the operations level with two years of service. No other firefighters believe that their duties are impacted by the quality of benefits which are provided to them. Three firefighters stated that they believe that the duties performed by others are impacted by the level of coverage that they are provided with and the rest stated that they do not believe that others are impacted by their level of coverage.

Emergency Medical Responders Perception of Equity and Justice Of the emergency medical service responders interviewed only two stated that they believe that the benefits and compensation provided are fair and equitable. Of those two, one was a professional paid responder and the other is a volunteer. The volunteer responder is not an emergency medical

technician at any level but is only a driver. The other responder is no longer active but was a full-time paid responder. He stated that he left the field because he desired higher pay. He was only active for two years.

Those two responders are also the only two who stated that they feel as if others have an equitable and just perception of their compensation and coverage. One other responder stated that they have a mixed view. That responder is volunteer responder with one year of service. The remaining responders all stated that they believe the perception of other emergency medical responders is one of inequity and injustice.

Five of the emergency responders stated that their developed perception of injustice and inequity does have an impact on their job function and execution of their duties. Of these individuals, only one is still an active emergency responder and the rest have left the field. Two of those that left cited their reason for leaving as burnout and the other two cited a perception of an inequitable work relationship. Each of the five responders has a varying number of years of service and are split between volunteer and paid responders but are all emergency medical technicians at the basic level and hold the same job role. Four of the five responders who stated that their job function is impacted by their perception have graduate level degrees. The rest of the responders stated that their perception does not impact the execution of their duties. One of the responders who stated that their perception does not impact their duties specifically stated that if there were to be any reduction in benefits or coverage that it could impact the execution of their duties.

Each of the responders who stated that their job function is impacted by their perception also stated that they believe that others in the same field are also commonly impacted by a similar perception. One responder specifically stated, “I think people do the best they can with

what they are given and it does impact their duties." One responder who stated that their duties are not impacted by their perception stated that they believe that others in the field are. The remaining responders stated that they do not believe that others in the same field are impacted by their perception of equity and justice with regards to their benefits, compensation and coverage.

This study was focused on two research questions. The first being, what is the relationship between the benefits and compensation afforded to emergency responders and their perception of work equity, equality, justice, and risk management? The second research question was, how does the perception of equity, equality, justice, and risk management impact the execution of an emergency responder's duties?

The analyzed research data suggests that based on the current benefits and compensation which is afforded to emergency responders there is a perception of work inequity and injustice. This is supported by the data that shows over 75 percent of the sample population stated that they have developed a perception of inequity and injustice in their workplace specifically related to the benefits, coverage, and compensation which is provided to them by their employer. All of those in the sample population stated that they regularly experience a perception of danger while at work. Only six reported a low perception of danger, however, did acknowledge a conscious and present hazard. Responses from these emergency responders when asked about the perception which they have developed through their lived experiences as members of the emergency responder culture group included statements such as:

- "The coverage provided is not compatible to the tasks that we are expected to perform."
- "If I got hurt in the line of duty I would be provided with a degree of coverage, however I cannot maintain current quality of life without being able to work overtime which I would not be able to do if I sustained an injury."

- "I am dependent on the income from my side job to support my family. If I got hurt while working as a police officer I would still receive my salary there but would lose my secondary income which I need."
- "Everyone on this job needs supplemental income which they would not get if they got hurt."
- "I have to pay out of pocket for private disability insurance in case I get hurt on the job."

Although a relationship between the benefits and compensation provided to emergency responders and their perception of equity and justice was discovered there was no significant relationship found between these benefits and perception of equality. Only one member of the sample population stated "emergency responders working for other municipalities throughout the state make much more money than us and get better benefits. They can retire earlier and receive other fringe benefits which we do not get."

A relationship was found between these benefits and the perception of risk management of specific subgroups of emergency responders. Only two of the 11 firefighters stated that they believe that their duties are impacted by their perception of inadequate benefits and coverage provided by their employer, however six of the ten law enforcement officers and five of the 13 emergency medical responders stated that the execution of their work duties are impacted by their perception.

There were some outliers who indicated that they have a positive perception of work equity and justice. One respondent stated "I believe the job is extremely dangerous, but it is an accepted component of my life and if anything happened, I would be covered. I have assets that I need to maintain so I obtained my own disability insurance to cover the extras incase anything happens."

Regarding the second research question, the perception of equity, equality, justice, and risk management was reported to have an impact on how 12 out of the 24 members of the sample population executed their duties. When assessing the specific impact in which the developed perception has on each individual there was some degree of variance. Subgroups of emergency responders appeared to differ from each other. Firefighters reported their perception to have a lower impact on their work duties than did law enforcement officers and emergency medical responders. A few respondents stated, “when we’re working, we just focus on the job at hand and don’t think about anything else,” and “the danger is there but you can’t let it affect you.” When asked about the impact that their perception of inequity and injustice has on their work duties some respondents stated “we always have to make sure that we are number one and always go home,” “unless I know that there is an actual and immediate life threat I will not put myself in danger,” “most guys don’t think about it, but everyone knows there is a high risk of injury every day so you do the job the best you can,” “I’m just a volunteer, my income potential at my job will never be met by any coverage here.”

Limitations

This study was limited with regards to transferability due to the sample size which was possible for the study compared to the actual population of this culture group. The small sample size must be considered when analyzing this very large overall population which is composed of tens of thousands of emergency responders. No statistical analysis was conducted as the study was intended to focus on qualitative data rather than quantitative. The sample size was large enough to develop a degree of generalizability, however there is limitation. Dependability is an unavoidable limitation when dealing with studies involving perception as perceptions evolve over time. This is especially true at the time of data collection due to the state of contractual

agreements between New York City and the emergency service labor unions. Another factor which can be viewed as a limitation of the study is the fact that some members of the sample population are career emergency responders, while others are volunteer emergency responders. Although all of these individuals are grouped into the same culture group, this factor may have some bearing on their perception of the study's variables.

Recommendations

A similar study could be conducted in the same geographic area utilizing quantitative methods. A different study utilizing a quantitative method would most likely obtain less in-depth responses, however, could create a greater level of generalizability. For example, if this future study were to be conducted utilizing surveys rather than interviews it would be possible to reach a greater population, however, would limit the depth of responses. This type of study could also provide additional information regarding the similarities and differences between the developed perceptions of members of different subgroups of emergency responders. Additionally, further research should be conducted in different geographic areas to assess the transferability of this current study, as well as to gain greater insight into the culture group of emergency responders.

Implications

Any shift in the benefits, compensation, and coverage provided to emergency responders would have social change implications at individual, family, and organizational level. Change with regards to these benefits would impact individual emergency responders and their families as the data currently suggests a significant perception of inadequacy. This information could be utilized to support a push for different pilot programs which could be implemented to assess the impact of a change or enhancement of the current system.

The implementation of this type of change could boost morale within the culture group, enhance city-union relations, and re-develop the perceptions of emergency responders with regards to work equity, justice, and risk management. These developed perceptions were found to have an impact on the duties performed by emergency responders. An enhancement in these developed perceptions could have societal implications as the critical functions provided by members of the emergency response culture group are essential to maintaining public safety.

Conclusion

Every community in the United States is dependent on its local emergency responders to ensure public safety. Individuals who work in emergency response are members of a unique culture group who face many dangers and hazards. To mitigate these hazards, emergency responders are provided with certain benefits and compensation which this research has shown to be widely viewed as inadequate. This view has led to a developed perception of injustice and inequity in the workplace, which has additionally been shown to have an impact in the execution of duties. Ensuring that these individuals are provided with the means to proactively carryout their necessary function is critical to society. Any change in this field will have social implications at the individual, family, and community level.

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