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The Role Of The Frequency Of Trauma On The Effects Of PTSD And Health On Firefighters And Police Officers

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THE ROLE OF THE FREQUENCY OF TRAUMA ON THE EFFECTS OF PTSD AND HEALTH ON FIREFIGHTERS AND POLICE OFFICERS

by

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This research paper is examining the role of frequency of trauma and the effects of PTSD and health on firefighters and police officers. There have been mixed findings regarding the relationship between trauma, PTSD, and health. Further research is needed to better understand these relationships, especially in high risks occupations such as firefighters and police officers. Firefighters and police officers are at greater risk for developing PTSD, negative health outcomes, and be exposed to multiple traumas and it is important to study how these relate. Furthermore, there is little research investigating the relationship of the frequency of trauma, PTSD, and health in these occupations. The paper will expand on these populations in order to better provide services for mental health, how it can help professions who work in integrated health care, and to inform policies that could benefit firefighters and police officers.

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DEDICATION

I want to dedicate this work to my entire family.

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CHAPTER 1

INTRODUCTION

There is a relationship between PTSD, trauma exposure, and health. Researchers have found PTSD mediated the relationship between trauma experienced and negative physical health (Lang et al., 2006; Scott et al., 2013; Shnurr & Green 2004; Vedantham et al., 2001; Wachen et al., 2013; Weisberg 2002). Although, a research study did not find PTSD symptoms explained or identified the relationship between trauma exposure and health, which demonstrates mixed findings regarding the relationship between the three constructs (Irish et al., 2013). Irish and colleagues (2013) did find there was a relationship between trauma exposure and health. The findings suggest further research is needed to understand PTSD, trauma exposure, and health. Furthermore, it is important to investigate these relationships in high risks occupations, such as firefighters and police officers. These populations are exposed to multiple traumatic events because of their work and are at an increased risk for developing PTSD (Skogstad et al., 2013). Investigating the frequency of trauma is also important since there is not much research examining if there is a relationship between number of traumas, PTSD, and health in firefighters and police officers.

PTSD can develop after an individual experiences or witnesses a traumatic event (American Psychiatric Association [APA], 2013). The lifetime prevalence rate of PTSD is 6.8% (Kessler, Chiu, Demler, & Walters, 2005). PTSD is associated with negative health outcomes; PTSD has an increased comorbidity with other mental disorders, and is associated with a high risk of suicide (Fetnzer, McMillian, & Sareen, 2011; Kessler et al. 2005; Panagioti, Gooding, & Tarrier, 2012; Vidal et al., 2018). PTSD also affects the quality of social relationships, self-esteem, and overall sense of well-being (Kashdan, Uswatte, Steger & Julian, 2006).

In multiple studies researchers have found experiencing multiple traumas is related to PTSD (Breslau, Chilcoat, Kessler, & Davis, 1999; Bromet, Sonnega, & Kessler 1998; Kessler, 2000; Sledjeski, Speisman & Dierker, 2008). In work-related populations, veterans who experienced four or more traumatic incidents were more likely to develop PTSD symptoms compared to veterans who experienced fewer number of traumatic events (Hartley et al., 2013; Jakob et al., 2017). Sledjeski, Speisman, and Dierker (2008) found the amount of lifetime traumas explained the relationship between persistent health conditions and PTSD. There is a relationship between multiple trauma exposure and psychological distress, decrease in social functioning, engaging in excessive drinking, and increase in suicide rate (Forman-Hoffman et al., 2016; Karam et al., 2014; Lebouthiller et al., 2015).

Firefighters and police officers are in high-risk occupations given the type of work they do and their potential exposure to traumatic situations. Members of the military, as well as military veterans, can also experience work-related or duty-related PTSD. This type of PTSD is developed after an individual is exposed to traumatic events while working. The current literature on work related traumas has few studies that focus on the role of number of traumas and health (Forman-Hoffman, 2014; Husarewycz et al., 2014; Karam et al., 2014; Sumner et al., 2017). There is limited research on firefighters and police officers that examines the relationship between frequency of trauma, work-related PTSD, and health even though there is a connection between this population and all three constructs.

According to the Center for Disease Control and Prevention (CDC), firefighters are more likely to have heart diseases, which is the leading cause of death among this population (CDC, 2015). Firefighters also have one of the highest risks of death and injury (Bureau of Labor and Statistics, 2019). Given that PTSD is associated with cardiovascular disease and being a

firefighter is associated with higher likelihood of developing a heart disease, firefighters may be more susceptible to have negative physical and mental health outcomes. Furthermore, firefighters engage in excessive drinking as means of coping, experience high suicidal ideation, and have high suicide rates (Haddock et al., 2015; Martin, Tran, & Buser, 2016; McIntosh et al., 2016; Stanley, Hom, Spencer-Thomas, & Joiner, 2016). For example, Haddock and colleagues (2015) conducted a study of 954 male firefighters in 14 states and found that approximately half of the participants reported excessive drinking. Researchers have also found evidence for higher prevalence of cancer in firefighters compared to the general population, although one study did not find any differences between prevalence of cancer in firefighters compared to the rest of the general U.S. population (Brand-Rauf et a., 1998; Lenehan et al., 2018).

Police officers have one of the highest numbers of injury fatalities, and similar to firefighters, have high suicide rates (Bureau of Labor and Statistics, 2017; Stanley, Hom, & Joiner, 2015). Police officers are more likely to experience sleep disturbances and sleep difficulties, which can have adverse effects on health since sleep difficulties have been associated with cardiovascular diseases, insomnia, and infectious diseases (Irwin, 2015; Palagini et al., 2013; Patel & Patel, 2018). In one study, Violanti and colleagues (2013) examined the life expectancies for 2,800 New York police officers and they found lower life expectancy for this population when comparing them to the U.S. population. Firefighters and police officers can have multiple trauma exposures and are at a higher risk of developing PTSD symptomatology. There are mixed findings about the relationship between health, PTSD, and frequency of trauma. Some researchers have found that PTSD mediates the relationship between frequency of trauma and health (Lang et al., 2006; Scott et al., 2013; Shnurr & Green 2004; Vedantham et al., 2001; Wachen et al., 2013; Weisberg 2002).

Given that there is a relationship between frequency of trauma (i.e. number of traumatic events experienced by the individual), PTSD, and health I plan to examine how frequency of trauma effects work-related PTSD symptomology, and how work-related PTSD symptomatology effects health outcomes. Furthermore, since firefighters and police officers can experience multiple traumas, can have PTSD symptomology, and negative health outcomes, I plan to study the impact between the three constructs in these populations. The findings of the study will contribute to the literature in understanding better how the number of traumas influence the development of work-related PTSD symptomology, and how work-related PTSD symptomology influences health outcomes in firefighters and police officers. It can also inform mental health services and professionals to better help these populations and to shed light on policies such as continuing to do training programs and making services readily accessible and available for people in these occupations.

CHAPTER 2

LITERATURE REVIEW AND IMPLICATIONS

Relationship between Post Traumatic Stress Disorder, Trauma and Health

There are inconsistent findings regarding the relationship between PTSD, negative health outcomes, and multiple traumas. Some researchers suggest PTSD or the symptoms of PTSD mediate the association between experienced trauma and negative physical health (Lang et al., 2006; Scott et al., 2013; Shnurr & Green 2004; Vedantham et al., 2001; Wachen et al., 2013; Weisberg 2002). However, Irish and colleagues (2013) found PTSD symptoms did not mediate, or identified or explained, the relationship between trauma exposure and health. Irish and colleagues (2013) examined 190 survivors of a motor vehicle accident and assessed participants' PTSD symptoms six weeks following the motor vehicle accident via a clinical interview. The researchers also assessed the individuals' health six months after the accident. Previous traumatic exposure and factors such as age when participants first experienced trauma and the number and types of trauma experienced were measured. The researchers explored whether participants' responses about previous traumatic exposures were related to physical health and if that relationship was mediated by posttraumatic stress symptoms. The researchers' results did not support their hypothesis about PTSD symptoms mediating the association between being exposed to trauma and health outcomes. However, Irish and colleagues (2013) did find a relationship between trauma exposure and negative physical health which supports previous findings in this area that trauma exposures are associated with health and there is a relationship between the two. Furthermore, Tansill and colleagues (2012) investigated the mediation between adult and/or adolescent sexual assault compared to physical health and trauma as it relates to psychological symptoms such as PTSD and depression. However, no association between

childhood sexual assault and physical health was found (Tansill et al., 2012).

The literature provides support for a relationship between PTSD, trauma, and health. There needs to be more research on the number of traumas and if there is a relationship among PTSD and health. Furthermore, studying police officers and firefighters since there are at an increase of developing PTSD, are exposed to multiple traumas in their line of work, and can have negative health outcomes.

Trauma and Posttraumatic Stress Disorder.

Trauma can have different definitions. In one book, the authors refer trauma to mean "wound" (Johnson, 2008). In the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5), trauma can occur after being exposed to an event where an individual was exposed to threatened or actual death, experiencing sexual violence, or serious injury (American Psychiatric Association [APA] 2013). The National Survey on Drug Use and Health (NSDUH) Mental Health Surveillance Study (MHSS) conducted a study where researchers found 2,679 adults out of 5,653 were exposed to a potential traumatic event (Forman-Hoffman et al., 2016). Furthermore, women will experience at least one traumatic event in their life according to another study (Mitchell et al., 2012). PTSD can develop after experiencing a traumatic even although most people do not develop the disorder (APA, 2013). The lifetime prevalence of PTSD in the United States is 6.8% (National Comorbidity Survey [NCS], 2017).

PTSD was first introduced as a diagnosis in the Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (DSM-III) in the 1980s. Many of the PTSD symptoms stated in the DSM can be traced back to World War I, when several American veterans came home suffering from what was termed as shell shock syndrome (Figley, 1978). The symptoms for PTSD outlined in the DSM-III are similar to the current symptoms of PTSD in the DSM-5 including

individuals having difficulty sleeping and experiencing nightmares (APA, 1980; APA, 2013). PTSD symptoms include recurring distressing memories, avoidance of situations or events associated with traumatic events, negative mood and cognitions, sleep disturbances, and hypervigilance (APA, 2013). The disorder can occur after an individual experiences one or more traumatic events or experiences, or through indirect exposure through a family member or friend (APA, 2013). The symptoms they experience have to persist for more than one month (APA, 2013). Some of these events can include assault, environmental disasters, sexual violence, or repeated exposure to trauma through an individual's work. PTSD rates are higher in individuals whose work puts them at risk for traumatic exposure such as police officers, firefighters, medical personnel, and veterans (APA, 2013). The prevalence of PTSD is higher in women than in men, although one possible explanation for this gender difference could be that women are more likely to seek mental health help and therefore more likely to get diagnosed with PTSD (Breslau et al., 1997; Pietrzak et al., 2011).

There are protective and risk factors that contribute to PTSD (APA, 2015). For example, a person's temperament as a child, comorbidity with other mental illnesses, lower socioeconomic status, prior trauma, the quality of education, family history of mental illness, the severity of the trauma, unhealthy or inappropriate coping strategies, race and ethnicity, or repeated exposure to reminders of the trauma are some of the risk factors (APA, 2013; Acierno et al., 2000; DiGangi et al., 2013; Ozer et al., 2003; Xue et al., 2015). Social support prior to experiencing the trauma has been shown to be a protective factor, but the risk for developing PTSD is higher if the person is divorced, separated, or widowed (APA, 2013; Brewin et al., 2000; James et al., 2013; McCall-Hosenfeld et al., 2014; Ozer, Best, & Lipsey, 2003).

Treating PTSD can be expensive, especially for military veterans. According to

Taniellian and colleagues (2008) between $5,904 to $25,757 is spent for each military personnel undergoing PTSD treatment. The Congressional Budget Office (CBO) conducted a study published in 2012 and reported that between 2004 and 2009, the Veterans Hospital paid $1.1 billion for the first four years of treatment for veterans with PTSD and traumatic brain injury (CBO, 2012). PTSD affects daily functioning, work, and relationships. PTSD also increases the probability of individuals dying from suicide (APA, 2013). The National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) investigated PTSD and suicidal ideation and found that thirty-one percent of individuals with PTSD (n = 738) struggle with suicidal ideation, and that suicide risk increases for individuals who have experienced childhood abuse (APA, 2013, LeBouthilliar et al., 2015).

PTSD has also been associated with poor physical health and heart disease. Vidal and colleagues (2018) studied the risk of cardiovascular disease in different populations by collecting their data from the Collaborative Psychiatric Epidemiology Surveys, The National Latino and Asian American Study, and the National Comorbidity Survey Replication. There was a total of 10,165 individuals who participated in the study, of which 4,180 identified as White non-Latinos, 3,081 as Latinos, 2,179 as Asian and non-Latino, and 717 as Black and non-Latino. The researchers found that there was a significant relationship between cardiovascular disease and PTSD for all populations, with the exception of Asian participants (Vidal et al., 2018). The researchers provide evidence that being exposed to trauma can have negative health outcomes. Furthermore, PTSD has a high comorbidity with other disorders such as substance use disorder (Fetnzer et al., 2011; Kessler et al., 1995). Having a substance use disorder can lead to negative health outcomes for individuals with PTSD (Ouimette et al., 2006). PTSD is related to negative health effects and can have negative health outcomes, but further investigation is needed on the

effects of frequency of trauma and if there is a relationship between PTSD and health.

The Effect of Trauma Frequency.

The more traumatic events a person experiences, the higher the risk of developing PTSD (Breslau et al., 1999; Bromet et al., 1998; Kessler, 2000; Sledjeski et al., 2008). Researchers have found a significant relationship between the history of child abuse, physical health, PTSD, and the number of lifetime traumas for women (Cloitre et al., 2002). According to Cloitre and colleagues (2002), PTSD symptomatology could explain physical health perceptions. They suggest that PTSD might be independent to the association between the number of lifetime traumas and medical problems.

In another study conducted by Sledjeski and colleagues (2008) through The National Comorbidity Survey-Replication (NCS-R), the researchers investigated if the number of lifetime traumas explained physical health and PTSD symptomatology (n = 5,692). Their results implied that the number of lifetime traumas does explain the association between chronic medical conditions and PTSD, after excluding headaches and examining individuals who reported experiencing trauma. Individuals with PTSD exhibited a high risk of having chronic medical conditions in comparison to non-traumatized individuals (Sledjeski et al., 2008). There appears to be a relationship between the frequency of trauma, PTSD, and health.

Trauma Frequency and PTSD. Lee and colleagues (2017) studied the association between multiple potential traumatic events and posttraumatic stress symptoms in firefighters in South Korea (n=200). After controlling for marital status, education, number of years worked, depressive symptoms, sex, and childhood trauma, the authors concluded that firefighters who experienced multiple potential traumatic events and developed stress symptoms after traumatic exposure had a higher risk for developing posttraumatic stress symptoms (Lee et al., 2017). Lee

and colleagues (2017) demonstrate this relationship among firefighters, a population that has a higher likelihood of being exposed to multiple traumas and thereby developing PTSD.

Trauma Frequency and Health. Even if multiple trauma exposure does not lead to the development of PTSD, multiple lifetime traumas can have a negative impact on an individual's life and health. The World Health Organization World Mental Health Survey Initiative tracked PTSD symptoms in individuals for one year in 11 countries (Karam et al., 2014). The researchers found that 19.8% (n= 51,295) of the individuals had multiple traumatic exposures (Karam et al., 2014). Those who had experienced four or more traumatic events were more likely to experience problems in their work, social life, close relationships, and overall functioning (Karam et al., 2014). Karam and colleagues (2014) suggest that the more trauma experienced the higher the likelihood to experience problems in relationships and overall functioning. The National Survey on Drug Use and Health (NSDUH), sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA), conducted surveys from 2008-2012. Participants engaged in a telephone interview to assess for PTSD and after the completion of the NSDUH interviews were asked for their lifetime exposure to one or more potentially traumatic events (Forman-Hoffman et al., 2016). Researchers found that adults who were exposed to one or more potential lifetime traumatic events engaged in heavier binge drinking in the last month, compared with those who were not exposed. In addition, adults exposed to one or more potentially traumatic exposures were more likely to have psychological distress, mental illness, used mental health services, developed health conditions such as high blood pressure, anxiety, and depression, and were more likely to develop suicidal thoughts within the last year (Forman-Hoffman et al., 2016). Many of the participants expressed higher posttraumatic stress symptoms within the previous year if they were between the ages of 18-49 or 50 or older. Females and participants

who had ‘other’ for their employment status, and had their family income as less than $20,000, endorsed higher posttraumatic stress symptoms (Forman-Hoffman et al., 2016). Participants with posttraumatic stress symptoms and those with one or more lifetime potential traumatic exposure showed significant substance use (Forman-Hoffman et al., 2016). There is an association between multiple traumatic exposures and alcohol use as well as experiencing psychological distress. However, Forman-Hoffman and colleagues (2016) did not examine the type of traumatic events the participants experienced or the settings of the exposures, such as if it occurred on their job.

Furthermore, there are common health conditions associated with trauma and PTSD. Researchers collected data from the National Epidemiologic Survey Wave 2, with a total of 34,653 participants. They found that there was a relationship between trauma, cardiovascular, and gastrointestinal disease. Specifically, trauma due to natural disasters or terrorism and combat-related trauma was found to have a relationship with cardiovascular, gastrointestinal, and arthritis whereas other trauma did not have a significant relationship with other physical conditions (Husarewycz et al., 2014). The increased number of traumatic events experienced by an individual also increased the number of physical ailments but was independent of PTSD (Husarewycz et al., 2014). When examining chronic medical conditions including chronic pain, cardiovascular, respiratory, neurological, and other conditions, the authors found a greater risk for individuals experiencing trauma and PTSD (Husarewycz et al., 2014). Although, when Husurewycz and colleagues (2014) examined PTSD and chronic medical conditions, no significant trauma was reported.

At Risk Populations. Other studies have examined the associations between the number of traumas and health among specific at risk populations. Sumner and colleagues (2017)

discovered that trauma exposure and severe PTSD symptoms increased the risk of cardiovascular disease for women nurses. 49, 978 female nurses participated in the Nurse's Health Study II in which data was gathered biennially for twenty years. The results suggest that a nurse who is exposed to four or more traumas is at a higher risk of developing cardiovascular disease (Sumner et al., 2017). Nurses with trauma but no PTSD symptoms were also at a high risk of cardiovascular disease. This study examined PTSD and cardiovascular disease in a work-related population, and the results support the hypothesis that multiple traumas are associated with negative health risks.

Jakob and colleagues (2017) conducted a study in the Midwest VA researching combat veterans. Data were collected from 2006-2013, with a total sample of 2,463 veterans who participated and answered the Combat Exposure Scale, Life Events Checklist (LEC), and the Clinician Administered PTSD Scale. Studies found that the average number of traumatic events assessed by the LEC was 6.89. Through their findings, 76% of the participants sampled indicated experiencing four or more lifetime traumas which was associated with PTSD symptoms (Jakob et al., 2017). Sexual trauma and combat trauma were found to have a stronger association with PTSD (Jakob et al., 2017). The type of work environment influences trauma exposure, putting combat veterans at an increased risk for developing PTSD. PTSD mediated the relationship between combat exposure and physical symptoms several years after service (Friedman et al. 1995). This study demonstrates the need to understand the relationship between traumas experienced in the workplace and its association with PTSD symptoms. Although Friedman and colleagues (1995) did not study health in this population, it provided information about the relationship between PTSD symptoms, combat exposure, and health.

When investigating police officers in Buffalo, New York (n = 359), Hartley and

colleagues (2013) found an increase in PTSD scores in women who had several traumatic events and men with higher PTSD scores in relation to seeing victims of assault. Data were collected between 2004-2009 and were as part of a larger study that investigated subclinical cardiovascular disease among police officers (N = 359; 260 = men and 99 = women). Furthermore, in one particular article from the National Epidemiologic study of Alcohol and Related Conditions, the authors found additional trauma increases suicide ideation to 20.1% and increases the rate of suicide attempt by 38.9% (N=34,653; Lebouthiller et al., 2015). There is higher suicidal ideation and attempts among people with PTSD symptoms in comparison to those with no lifetime traumas or PTSD (Lebouthiller et al., 2015).

Summary and Critique of Effects of Trauma Frequency. The literature presented above provides support for an association between the frequency of trauma incidents and negative health conditions, or PTSD symptomatology, and multiple traumas experienced. There were a few studies that found a relationship between frequency of trauma, PTSD, and health and the researchers suggested that lifetime trauma experienced could explain the association between chronic health conditions and PTSD (Sledjeski et al., 2008). There are limitations to these studies. Only a few studies focused on work-related populations such as combat veterans, nurses, police officers, and firefighters and not all studies examined the relationship between the three variables of interest. There is also limited research done on work-related PTSD and trauma exposure or lifetime exposure and health. Given that firefighters and police officers are at high risk for developing negative health outcomes such as cardiovascular disease and developing PTSD, further research is needed to better understand if there is a relationship between work-related PTSD, health, and the number of traumas they experience on their job. Furthermore, since there are mixed findings of the association of these three variables, more research is needed

to understand the role of trauma frequency in PTSD symptomatology and health. There has not yet been a study that has examined the effects of frequency of trauma and specifically examining work-related PTSD symptomatology in firefighters or police officers, or how work-related PTSD symptomatology affects health outcomes in this population.

Work-Related PTSD.

A significant proportion of PTSD literature focuses on the military and veteran population. This type of PTSD is work-related or duty-related since it often develops after being exposed to a traumatic event while doing their work or duty. Other occupations also share a high risk and prevalence for the development of PTSD or PTSD symptoms. Skogstad and colleagues (2013) conducted a literature review examining several databases and searched for work-related PTSD articles. The researchers searched for terms such as 'occupation' and 'PTSD' in articles written in either English or Scandinavian and excluded the articles dealing with PTSD in the military and non-occupational settings (Skogstad et al., 2013). They found 140 studies and excluded non-peer reviewed articles, and jobs that did not have direct trauma exposure like forensic personnel, therapists, and flight attendants.

Firefighters, police officers, ambulance personnel, train drivers, health care professionals, drivers, and journalists were some of the occupations identified by Skogstad and his colleagues (2013) in their study. The researchers found that first responders, which include police officers, firefighters, and ambulance personnel, were at a higher risk of being exposed to traumatic events. Firefighters, in particular, were at greater risk for developing PTSD than police officers (Skogstad et al., 2013). A sound workplace, social support from coworkers, and their bosses were some suggested factors to prevent PTSD in the workplace (Skogstad et al., 2013).

The study highlighted how work-related PTSD can impact several occupations and how

some may experience more traumatic events as well as having a higher risk for developing PTSD. Some of the limits of the literature search Skogstad and his colleagues (2013) found was the inability to assess different types of traumas, or frequency of traumas, and investigate if there were any relationships or differences between trauma frequency and PTSD in these populations.

In another study, Wise and Beck (2015) investigated work compensation insurance coverage (WC) of work-related PTSD. They found the WC does not completely meet mental health needs since it sometimes does not cover mental health illnesses that occur because of their work (Wise & Beck, 2015). The authors accessed the Department of Labor's website and reviewed the WC related statues (Wise & Beck, 2015). Wise and Beck's results demonstrate that individuals can develop work-related PTSD, but WC does not meet health care needs, which can impact people's lives and their ability to do their jobs. Furthermore, having difficulty accessing services can become an additional barrier for individuals who are experiencing stigma about mental health services (Haugen et al., 2017). Moreover, the study does not provide the type of work and professions in which they sought WC of work-related PTSD, which could have shed light on occupations with more incidences of work-related PTSD.

Brondolo and colleagues (2018) researched the pathways that linked exposure to trauma in the workplace, along with mental health symptoms in first responders. They specifically investigated Medical Examiners (ME), which include investigators, autopsy technicians, clerical and administrative, ME's/pathologists, and ME's whose work involves law, research, or working in a laboratory. The longitudinal study included a subsample of 151 individuals, with MEs completing the first assessment after three months (Brondolo et al., 2018). The research included a total of 203 participants, with the majority of the participants identifying as women (n = 164).

The clients were administered four measures including the Beck Depression Inventory-II,

(which assessed depressive symptoms), the Posttraumatic Stress Diagnostic Scale (which assessed PTSD symptoms), the Posttraumatic Cognition Inventory (PTCI; used to assess negative cognitions, a demographic questionnaire, and two developed scales; the Case Exposure Scale and the Family Contact Scale for ME employees to evaluate the type of exposure and frequency to potentially traumatic events. The Case Exposure focuses on indirect and direct frequency of 12 different types of traumatic exposures, while the Family Contact Scale used secondary/vicarious traumatization based on the number of contacts with deceased family members (Brondolo et al., 2018). The researchers investigated negative cognitions as a mediator for depressive symptoms and work place trauma exposure to PTSD, and found that these cognitions mediated the relationship of case exposure symptoms for PTSD and depression (Brondolo et al., 2018).

These studies highlight the importance of investigating trauma that occurs in the workplace, PTSD and PTSD symptomatology, and the number of traumatic exposures. There are high-risk occupations that might be at higher risk for experiencing these situations and symptoms. The nature of work for firefighters and police officers can lead to highly stressful and traumatic situations, which is why there has been a continuous amount of research focusing on both these occupations.

Firefighters. Firefighters are a high-risk occupation because of the demanding and dangerous nature of their work. It is one of the occupations with the highest risk of deaths and injury (Bureau of Labor and Statistics, 2019). According to the Bureau of Labor and Statistics, of the 10,000 fulltime time firefighters and prevention workers, there is a 397.5 incidence rate from injuries or illnesses (Bureau of Labor and Statistics, 2015).

Prevalence rates for PTSD and PTSD symptomatology in firefighters are high because of

trauma exposure (Haslam & Mallon, 2003). Berger and colleagues (2012) conducted a systematic review and meta-regression searching for correlations of PTSD in rescue workers worldwide. In this systematic review, the authors reviewed several databases, including PubMed, and searched for the rates of PTSD among rescue workers until September 2008. The authors selected only 28 studies for their systematic review and included studies with individuals who were canine handlers, ambulance personnel, firefighters, and police officers, but only if they were involved in rescuing operations after a severe disaster (Berger et al., 2012). One of the inclusion criteria required these occupational workers had to be exposed to the same major disaster. Berger and his colleagues found the prevalence of PTSD in rescue workers was 10%, and the meta-regression conducted suggests higher prevalence rates in Asian countries, but lower than in the United States (Berger et al., 2012). Although the authors suggest this may be due to the same disaster event, disasters in certain countries are more prone to go through earthquakes, the subject of their research.

Suicide and PTSD. In firefighters, there is a high risk of suicide, and researchers found the more severe the firefighters' symptoms of PTSD were, the higher risk of global suicide (Bartlett et al., 2018). In this study, Bartlett and colleagues recruited 765 firefighters from the southern United States who met criteria A for PTSD in the DSM-5 (Bartlett et al., 2018). This suggests firefighters who experienced trauma and developed PTSD symptomology where at greater risk for suicide, which supports the importance of treating individual's PTSD symptomatology (even if they do not meet full DSM-5 criteria for PTSD). Bartlett and colleagues found the moderating role of distress tolerance and suicide risk along with the severity of PTSD symptomatology (Bartlett et al., 2018; Haddock et al., 2015; Haslam & Mallon, 2003). The results from the study suggest lower levels of distress tolerance where

associated with higher suicide ideation (Bartlett et al., 2018). Martin and his colleagues conducted a similar study in 2017 and found firefighters with more severe PTSD symptomology associated with higher suicide attempts and suicide ideation (Martin et al., 2017). Martin and colleagues as well as Bartlett and colleagues' studies demonstrate how prevalent PTSD is in this population as well as the risk for having both PTSD symptomatology and suicide risks (Bartlett et al., 2018; Martin et al., 2017).

A study published in 2018 used the Arizona Vital Statistics Information Management System Electronic Death Registry for Emergency Medical Technicians (EMTs), which includes paramedics and firefighters, and non EMTs (Vigil et al., 2018). The records, collected from 2009-2015, found 7,838 out of the 350,998 deaths that occurred within those years were deaths by suicide for both non EMTs and EMTs (Vigil et al., 2018). There were 1,205 deaths from EMTs, 63 of them were deaths by suicide, while non EMTs had 7,775 out of 349,793 were deaths related to suicide (Vigil et al., 2018). There is a higher percentage of suicides in EMTs in comparison to non EMTs even after controlling for age, gender, race, and/or ethnicity (Vigil et al., 2018). These studies further provide support evidence that firefighters having higher rates of suicide and suicidal ideation than other professions and the general population (McIntosh et al., 2016; Martin et al., 2016; Stanley et al., 2016). In addition, a meta-analysis study further supports an association between suicidality and PTSD (Panagioti et al., 2012).

Firefighters are likely to witness multiple traumatic events since their jobs can include putting out fires, rescuing children, and responding to emergencies (Bureau of Labor and Statistics, 2019). Combined with the high risk of developing PTSD they can have adverse health effects (Haslam & Mallon, 2003). Firefighters have a high risk of using alcohol, which is associated with more sleep disturbances and negative health impacts (Wong et al., 2004). In one

study, researchers found half of the 954 male firefighters recruited across 14 states reported excessive drinking (Haddock et al., 2015). Firefighters with fewer years in the field reported more alcohol intake (Haddock et al., 2015). There is also a correlation between firefighters' suicidality and alcohol use (Martin et al., 2017).

Multiple traumas and PTSD. Furthermore, there is literature that supports the notion that experiencing multiple traumatic events can lead to higher PTSD symptomatology or higher risk for developing PTSD (Sledjeski et al., 2008). Firefighters are a vulnerable profession for negative mental health outcomes since they are at greater risk for developing PTSD (Del Ben et al., 2006). Although more studies focusing on firefighters and whether the type of traumatic event has any association with their health and/or development of PTSD or PTSD symptomatology.

Police Officers. Another high-risk occupation is law enforcement or police officers. Police officers are often the first responders in a scene (Bureau of Labor and Statistics, 2019). Similar to firefighters, police officers are often exposed to multiple traumatic events. According to the Bureau of Labor and Statistics 2015 report, police officers' incident rate is 497.7 for non-fatal occupational injuries and there was an increase of police fatalities by 14% from 2017 (Bureau Labor and Statistics, 2016; Bureau of Labor and Statistics, 2018). Police officers have a larger risk of being exposed to potential traumatic events or life-threatening situations (Skogard et al., 2013). Most notably, research has found there is a high risk for developing PTSD in this population (Berg et al., 2006; Hartley et al., 2007; Maguen et al., 2009). Police officers have a 1.3-20% chance of developing PTSD after a man-made mass violence, according to a systematic review across 20 studies covering posttraumatic stress disorder and first responders during the September 11 terrorist attack (Wilson, 2015).

Suicide and PTSD. In addition, researchers found support for high rates of suicide among police officers (Stanley et al., 2015). Stanley and colleagues (2015) conducted a systematic review examining 63 studies for protective factors, suicidal thoughts and deaths, and found police officers had an elevated risk for suicide and suicide behaviors (Stanley et al., 2016). The findings from a meta-analysis in 2003 suggest there are differences in suicide rates between regional, federal, and municipal police forces (Loo, 2003). As mentioned earlier, there is a relationship between suicidality and PTSD (Sareen et al., 2005). In suburban police officers, there is a correlation between symptoms of PTSD, work-related stress, and somatization (Robinson et al., 1997).

Multiple Traumas and Mental Health. Buchanan and colleagues (2001) studied 177 police officers and recruits, and gathered field report exposures to trauma, and discovered the more exposures they found, the more vulnerability they had for having psychological problems. One study on on-duty police officers exposed to trauma found correlations between decrease effort towards relationships and greater avoidance and hyperarousal trauma symptoms, and work-related assaults (Chopko & Schwartz, 2012). In another study conducted in the Netherlands, researchers noticed there were no differences in mental health problems when they compare their police officers to other non-dangerous occupations (Velden et al., 2013). The investigators of this study suggest resiliency, self-selection, and the rigor of the recruitment process might explain why there were low rates of mental health problems (Velden et al., 2013). However, these findings do not support previous research done in the United States regarding police officers. The researchers had two groups of officers (n = 144; n = 503) and compared them to bank employees and employees at a psychiatric hospital (Velden et al., 2013).

Health and Work-related Stress. Police officers have high rates of alcoholism as a way

to cope with stress (Sterud et al., 2007; Violanti et al., 1985). Furthermore, burnout in this occupation was correlated with negative health conditions (Golembiewski et al., 1992). A systematic review of police officers examined work-related stress in police officers and cardiovascular risk, but the findings were conflicting, and the authors could not determine if cardiovascular risk was based on the work-related stress, or if it was due to another health condition (Capitanelli & Pira, 2018). Nevertheless, having a higher risk of PTSD, alcohol use, and negative health can impact police officers' overall well-being.

Interventions. Because of the risk police officers run of having negative health outcomes, interventions were developed to help this population. A systematic review was conducted by Patterson and Swan (2014) where the investigators reviewed articles published from 1984 to 2008 but did not find any effective stress interventions in police officers. Police officers have been a topic of study for many years because of the risks and nature of their job, and a lot of data has been collected, allowing for many thorough systematic reviews and meta-analysis. Recently, Arnetz and colleagues (2008) developed a resiliency training for police officers for a ten-week period with 18 officers. When they did a twelve-month follow-up, the participants self-reported they had lower stress levels and less negative mood.

Barriers and Mental Health. The investigators' research has revealed the necessity of providing police officers with the latest information on interventions and resources on handling trauma since they are at risk of experiencing multiple trauma exposure and negative health outcomes. When examining the stigma of seeking mental health in this employment, a meta-analysis and systematic review was conducted by researchers examining non-intervention articles regarding stigma or barriers to care in first responders (n=12; Haugen et al., 2017). First Responders, which include police officers, tended to be dissuaded from seeking mental health

because they were worried about confidentiality and the negative consequences it can have in their career (Haugen et al., 2017). Other barriers that prevent police officers from seeking treatment is not knowing where to go for help and scheduling conflicts (Haugen et al., 2017). The stigma and barriers police officers can experience can influence both their mental and physical health since they may not be getting the help they need.

Police officers are in an occupation where they can be exposed to traumatic events, such as traffic accidents, domestic violence, and are usually the first to be called during shootings. The nature of police work may place officers at a greater risk of developing PTSD, as well as an increased rate of suicide, alcohol consumption, and health risks (Capitanelli & Pira, 2018; Loo, 2003; Sterud et al., 2007). More research is needed to have a better understanding between work-related PTSD or work-related trauma and the differences in PTSD or trauma that occur in other settings such as traumatic exposure that can occur in a person's daily life.

Summary of Work-Related PTSD and Critique. These studies focus on work-related PTSD in firefighters and police officers. Work-related PTSD is developed after experiencing a traumatic event while on duty. PTSD also has high comorbidity for developing other disorders, such as substance use disorders, increases suicide risk, and treatment is often expensive.

Firefighters and police officers have a higher risk for developing PTSD, although not much research has been conducted on whether there are differences between work-related PTSD symptoms and the frequency of trauma an individual and trauma occurring in other settings as well as the negative health outcomes this population can experience. Researchers have discovered that experiencing multiple traumatic events increases the chances of developing PTSD or having higher PTSD symptomatology though no reports were done, if any, on the differences between the number of traumas, and whether there is an association with health and

PTSD symptomology.

Health in High-Risk Occupations.

Work plays a significant role in psychological, social, and emotional well-being (Blustein, 2008). Some work environments are linked to negative health risks. High-risk jobs can include firefighters, police officers, and even construction workers. Construction workers are at an increased risk for job-related deaths, illnesses, and injuries (Bureau of Labor and Statistics, 2019; Merlino et al., 2003; Welch et al., 2007). Construction workers are also more likely to experience musculoskeletal conditions and are also more likely to miss work due to aging related conditions (Welch et al., 2007). In England, low skill male construction workers were found to be at a higher risk for suicide (n=380) compared to other occupations such as musicians or artists (Windsor-Shellard & Gunnell, 2019). Researchers have found that firefighters are at a high risk for developing heart diseases compared to other occupations (Kales et al., 2007). Police officers are at a risk for developing sleep disturbances (Rajarantnam et al., 2011). Furthermore, both firefighters and police officers are more likely to develop PTSD and negative health outcomes associated with PTSD. In sum, high risk occupations, given the type of work they entail, have higher physical health risks.

Firefighters' Health. Heart disease in the United States is the leading cause of death, and about 610,000 individuals will die from heart disease every year (Center for Disease Control and Prevention [CDC], 2015). Firefighters are at a high risk of developing heart disease. Kales and his colleagues (2007) found that one particular population that is susceptible to heart diseases is firefighters, counting for up to 45% of deaths in firefighters due to heart disease. The researchers reviewed the Federal Management Agency of the United States and researched 1,144 on-duty firefighters' deaths between 1994-2004, excluding the deaths that occurred 48 hours after the

terrorist attack that happened on September 11, 2001 (Kales et al., 2007). Kales and colleagues' study highlight the risk of dying from cardiovascular disease in this population. In a more recent study published in 2018, Smith and her colleagues (2018) studied duty-related deaths for male firefighters ages 18-65 in the United States from 1999-2014. The authors reviewed records from the US Fire Administration and the National Fallen Firefighters Foundation investigating at duty-related deaths, which is defined as death of the firefighter occurring while on duty or within 24 hours of them being at work or training (Smith et al., 2018). The total amount of fatalities recorded was 1,644. However, the sample size used for analysis was 627 after excluding those firefighters who did not have autopsy reports, women firefighters because of a small sample size (n = 25), firefighters who were not between the ages of 18-65, and firefighters whose heart weight was missing from the data set (Smith et al., 2018). Researchers found 276 deaths due to cardiac-related concerns, and evidence for 82% of firefighters being diagnosed with coronary artery diseases and high heart weight (Smith et al., 2018). This study suggests that screenings of heart enlargement might help with the prevention of cardiac deaths in firefighters.

As stated previously, firefighters are at risk for developing PTSD. According to a meta-analysis study by Buckley and Kaloupek (2001), individuals with PTSD have a higher heart rate in comparison to individuals who experienced trauma and did not have PTSD and individuals who did not experience any trauma. This meta-analysis included 34 studies where heart rate, systolic blood pressure, or diastolic blood pressure were measured as the dependent variables and PTSD symptoms were measured using a diagnostic measure or interview (Buckley & Kaloupek, 2001). Researchers have provided evidence for a significant correlation between cardiovascular activity and PTSD (Blanchard, 1990; Blanchard et al., 1991; Song et al., 2019). There is also research evidence suggesting that PTSD is correlated with hypertension (Kibler et al., 2009). In

Habersaat and colleagues' (2015) study, negative health outcomes related to PTSD symptoms, perceived chronic stress, and depression were found in 86 Switzerland firefighters, but only when they had lower social standing, less social support from their bosses, or experienced more loneliness. Since researchers have demonstrated a relationship between PTSD and cardiovascular diseases, and firefighters are at risk for developing PTSD as well as having heart diseases, firefighters are susceptible to both of these negative health outcomes. This demonstrates a need to understand and study this population in the context of work-related PTSD and the related negative health outcomes.

Researchers have conducted studies examining cancer prevalence in firefighters because the smoke they sometimes inhale may contain carcinogens from the burning material (Beaumont et al., 1991; Brand-Rauf et al., 1998; Demers et al., 1992; Feuer & Rosenman, 1986). Lenahan (2018) conducted a study examining firefighters and police officers in New Jersey and the prevalence of cancer in this population compared to the general population. Lenahan (2018) found no significant differences in the prevalence of cancer among firefighters and police officers compared to the general population. A study done by the National Institute for Occupational Safety and Health (NIOSH) found firefighters to be at a higher risk of developing cancer (NIOSH; CDC, 2018). However, this study did not take into account factors such as lifestyle choices between firefighters, did not include minority groups, and did not measure the exact nature of exposure to traumas (CDC, 2018).

Police Officers' Health. Police officers' health is also impacted by the type of work that they do. Violanti and colleagues (2013) recruited Buffalo, New York police officers (N=2,800) for their studies, and found that their life expectancy was lower, having a mean difference of 21.9 years with a 95% confidence interval of 14.5-29.3, in comparison to the general population

in the United States. Although this research only focused on a specific area, their findings suggest that something within this population is occurring for there to be discrepancies in their life expectancy. The investigators of this study speculated that post-traumatic stress or workplace stress may have led to these findings (Violanti et al., 2013).

Sleep disturbances are also common in police officers. A total of 4,957 police officers were given an online self-report survey to assess for sleep disorders, shift work disorder, body mass index (BMI), restless leg syndrome, and burnout (Rajarantnam et al., 2011). The researchers found that there was a high prevalence of sleep disorders, and 40.4% of participants endorsed sleep disorder symptoms (Rajarantnam et al., 2011). Insomnia or sleep disturbances have been linked to infectious diseases, progression of cancer and cardiovascular disease, and depression (Irwin, 2015; Palagini et al., 2013; Patel & Patel, 2018). In an epidemiology study (n=4,794) short sleep duration and trouble falling asleep increased the risk of hypertension in police officers (Suka et al., 2003).

Summary and Critique of Health in High Risk Jobs. Firefighters and police officers are more likely to develop certain health risks, such as cardiovascular disease or heart disease, compared to the general U.S. population because of the nature of their work (CDC, 2015; Irwin, 2015; Kales et al., 2007; Patel et al., 2012). Research findings indicate that PTSD is associated with a higher risk of developing cardiovascular disease. Researchers speculate that this is due to the physiological and behavioral facets of PTSD (Edmonson & von Kanel, 2017). Given that these occupations both have a high risk for developing PTSD and heart disease, it highlights the importance of doing further research on the relationship between PTSD and health in firefighters and police officers.

Research on the potential correlation between cancer and firefighters yielded mixed

findings. While some have found a relationship between the two (Beaumont et al., 1991; Brand-Rauf et al., 1998; Demers et al., 1992; Feur & Rosenman, 1986) there was one study that did not find an increase in cancer prevalence within firefighters and police officers (Lenahan, 2018). The risk of developing cancer in firefighters appears to be significant given that President Donald Trump has signed a legislation that will allow the CDC to set up a firefighter registry to examine the link between cancer and workplace exposure (CDC, 2018). Firefighters are also at risk of potential hearing loss (CDC, 2018). The NIOSH has provided standards to aid in the prevention of hearing loss in the workplace (CDC, 2018). There is also evidence that sleep disturbances have a high prevalence among police officers, which can lead to negative health impacts. Thus, firefighters as well as police officers are susceptible to not only a higher frequency of work-related stressors but are also at a greater risk of developing physical and mental distress. These findings demonstrate the importance of researching health outcomes in these two populations as well as health's relationship with PTSD symptomology.

Implications.

PTSD is a mental disorder that affects the lives of civilians as well as veterans. The lifetime prevalence is 6.8% and the estimated cost of PTSD treatment and traumatic brain injury, according to the CBO paid $1.1 billion (CBO, 2012; NCS, 2017).). PTSD symptoms interfere with social and occupational functioning. Individuals diagnosed with PTSD also struggle with adverse health consequences. The effects of PTSD symptoms for the population of firefighters and police officers are infrequently studied. There is a need to expand research for these at risk populations in order to provide mental health care services as well as develop prevention and management strategies. I will discuss the implications for practice as well as research with the population of firefighters and police officers.

Practice. Findings from this study will help in understanding if multiple traumas witnessed have an effect on work-related PTSD symptomatology and health. There are several evidence based treatments for PTSD, such as prolonged exposure therapy (PE) and cognitive behavioral therapy (CBT), which are commonly used in clinical settings (Najavits, 2015). Scholars have also researched the number of dropout rates for those seeking PTSD treatment in different populations (Najavits, 2015). This can be detrimental since there are different reasons why dropout rates occur, and some may be because of the complexity with comorbid disorders and the stigma individuals have toward mental health (Foa et al., 2013; Najavits, 2015). In a VA clinic and anxiety clinic, only 7.9% (n=59) of the individuals successfully completed CBT or PE (Mott et al., 2014). Retention rates are problematic in the treatment of PTSD and one of the influencing factors can be a stigma towards mental health. In the population of firefighters and police officers, there is high stigma. There are programs that attempt to reduce the negative perceptions of mental health in this population (Corrigan et al., 2012; Haugen et al., 2017). In a metanalysis conducted, researchers sought strategies for decreasing stigma and found that having social interactions with people who have had similar experiences changed the participants' perceptions (Corrigan et al., 2012).

In PE, the therapist's goal is to help clients with PTSD through exposure (Foa et al., 2007). The therapist first provides psychoeducation to the client so that the client can be ready to be exposed to the traumatic event through their imagination by using strategies such as breathing exercises (Foa et al., 2007). They recall the event by using all senses and are asked to imagine themselves as if they were experiencing the traumatic event. There is a point where there is *in vivo* exposure where the clients face the traumatic event (Foa et al., 2007). Given that firefighters and police officers can experience multiple traumatic events, it is possible to experience multiple

experiences of the same or similar events. Thus, it is important to study experiences of multiple traumas in order to gain better insight into how being exposed to these events multiple times can have an effect on the type of therapy. The results will help shed light on modifications to existing therapy, specifically for the use of individuals with multiple traumas.

Studying the association between work related PTSD, health outcomes, and frequency of trauma can also better inform professionals working in an integrated health care approach. For instance, how mental health professionals can work with physicians and/or psychiatrists when working with trauma survivors. Finding the relationship among the three variables can help individuals who are or have experienced all three and the professionals can work together to better help the client.

Research. The importance of studying work-related PTSD, health, and trauma frequency in firefighters and police officers is to further contribute to research on firefighters and police officers. There are mixed findings between the relationship between the number of traumas, health, and PTSD and there is not a lot of literature focusing on the number of traumas and relationship between health and PTSD, especially in firefighters and police officers (Irish et al., 2013; Lang et al., 2006; Scott et al., 2013; Shnurr & Green 2004; Vedantham et al., 2001; Wachen et al., 2013; Weisberg, 2002).

Firefighters and police officers have a high risk for experiencing not only PTSD in comparison to the general population (Haslam & Mallon, 2003; Maguen et al., 2009), they can also experience negative health consequences (Kales et al., 2007; Rajaratnam et al., 2011; Violanti et al., 2013) and have multiple experiences of traumatic events. Understanding the prevalence can help in the development of preventative measures as well as treatments that may be unique to this population. As previously mentioned, there is a need to increase research in

work-related populations such as firefighters and police offices when studying the association of PTSD symptomatology, negative health conditions, and the number of traumatic events experienced. One study suggested that lifetime trauma that an individual experiences may explain the relationship between PTSD and chronic health conditions PTSD (Sledjeski et al., 2008). This demonstrates the importance of doing future research in this field as well as in this specific population.

Policy. In regards to policy, this research can help shed light on different policies that can occur within police officers and firefighters. There have been programs that have been designed to decrease stigma among individuals regarding mental health (Kim et al., 2018; Anretz et al., 2009; Szeto et al., 2019; Hansson & Markström, 2014). One of these programs attempted to minimize distress and increase client performance (Arnetz et al., 2009). This type of resilience training helped with the wellbeing for beginning police officers (Arnetz et al., 2009). The researchers found the most helpful for participants was to have a critical incident from a realistic police work replicated (Arnetz et al., 2009). Other types of resiliency training have been researched such as training developed for first responders (Szeto et al., 2019). Researchers sought to reduce stigma and increase resilience and to better able to test this program they had a pre-group design (Szeto et al., 2019). After three months they had first responders answer a follow up (Szeto et al., 2019). Their findings suggest the culture of the job as well as having support from other individuals made a difference in resiliency training and decreasing stigma (Szeto et al., 2019).

Continuing to develop training programs as a way to increase resiliency and minimize stigma is important for firefighters and police officers. Having a better understanding of the number of multiple traumas experience has a relation with health and PTSD symptoms could

give better insight on what type of program they may benefit. Employers or fire and police stations can have education programs or regular education programs as a way to teach individuals about mental health and minimize the barriers of seeking treatment (Kim et al, 2018). Furthermore, firefighters and police officers have a stigma toward seeking mental health and these programs may decrease the stigma that they hold, especially in terms of confidentiality which has been shown to be a barrier in this population (Haugen et al., 2017).

Another policy that can be implemented is making mental health more accessible and available for individuals in this profession. As stated previously, PTSD costs can be expensive and the cost can range from $5,904 to $25, 757 for military veterans undergoing treatment for PTSD (Taniellian et al., 2008). Insurance can help individuals with their mental health costs, but the work compensation insurance overage of work-related PTSD does not meet the needs of individuals and may not cover mental health illnesses (Wise & Beck, 2015). This study did not specify the professions, but if firefighter and police officers do not have the money and want mental health services, especially if they develop PTSD could affect their job (Smith et al., 2005) as well as be a barrier. According to Smith and colleagues (2005), sleep disturbances have been associated with poor work performance and as previously mentioned both firefighters and police officers can experience sleep disturbances (Wong et al, 2004; Rajaratnam et al., 2011). Sleep disturbance can also be a symptom of PTSD (APA, 2013), which can ultimately impact their ability to do their work. Especially since PTSD can lead to work impairments (Smith et al., 2005), and severity of PTSD symptoms can extend the days of work missed (Heir et al., 2010).

Having policies within these professions about the health care costs of seeking mental health services could help individuals with decreasing the barrier. Less the monetary barriers more the individuals can seek mental health services and we can find ways to better treat these

individuals given their feedback and their dropout rates as discussed previously (Najavits, 2015). Even having an in house or a direct referral to a mental health professional may reduce costs and could be helpful since they can collect clinical data specifically in these populations to more clearly see if there is a relationship between the number of traumatic events, PTSD symptomatology, and health. This can also make it easier for individuals to schedule and know whom to seek help from, which research has found has been a barrier to seeking help (Haugen et al., 2017).

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