A Correlational Study of the Resilience Factors that Promote Mental Health in First Responders

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School of Behavioral Sciences, Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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There is no known conflict of interest to disclose.

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APPROVED BY:

Dr. Stephen Ford, Committee Chair

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Abstract

Too often, the title first responder (FR) has been correlated with mental illnesses, such as depression, anxiety, substance use, and posttraumatic stress disorder (PTSD). There was a need to address the mental health of this unique at-risk population prior to developing a mindset that being a FR translates into also suffering from mental illness, due to repeated exposure to traumatic situations. The purpose of this correlational study was to identify the resilience factors in FRs, what unique and untreated exposure to traumatic events looks like in FRs, what normal treatment and early interventions for mental illnesses in FRs is, the resilience factors that reduce symptomology for this population, and finally, the research question of what resilience factors serve to protect the mental health of FRs. The gap in the literature was addressed, as very little, if any, research provided why some FRs have resilience factors that have served as a buffer to developing mental illnesses throughout their careers and if those resilience factors can be trained to incoming FRs. The theory guiding this study was to identify resilience factors present in FRs who have served in their specific role for at least 10 years and have not received a diagnosis of depression, anxiety, substance use, or PTSD. A correlational design with regression analysis was used to measure the dependent variables of depression, anxiety, substance use, and PTSD. The 10-item Connor-Davidson Resilience Scale (CD-RISC) was used to measure the independent variable of resilience factors. The findings of the regression analysis were addressed, along with providing conclusions for this study and recommendations for future research.

Keywords: first responder (FR), high-risk population, depression, anxiety, substance use, posttraumatic stress disorder (PTSD), resilience

Dedication

I would like to dedicate my dissertation to my family. My husband, Tim; daughter, Cassie; son, Joseph; and daughter-in-law, Jackie, have been profoundly patient and supportive during this time. I want to thank them for allowing me the time and space to write this document and for continuing to encourage me, especially when I was feeling exhausted and overwhelmed. This was truly a family event, and I am forever grateful to have you as a part of my support group. I love you all so much!

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A very special thank you to all of those who are in my life through the ministry of LifePoint Church. I would not have made it without your prayers, encouragement, and unwavering support. Thank you, Darrell Hoover and Stephanie Leppo, for all of the proofreading of this document.

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Finally, I would like to acknowledge the power and grace of my Savior, Jesus Christ. I am where I am because of prayer! It was only by the strength that He has provided and the

amazing people that He has blessed me with that I can say, *"I have fought a good fight, I have finished my course, I have kept the faith"* (2 Timothy 4:7).

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Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)

Workplace Violence (WPV)

World Trade Center (WTC)

Chapter One: Introduction

Overview

First responders (FRs) answer a variety of stressful and dangerous calls, such as natural disasters, medical emergencies, accidents, and rescue situations (Bevan et al., 2022). During these calls, they provide crucial services to communities in various roles, such as police officers, firefighters, and emergency medical technicians (EMTs), to name just a few. Traditionally, FRs have been required to answer multiple calls a day, in which they are the first ones on the scene of an emergency. Due to the nature of the job, FRs not only experience much higher rates of posttraumatic stress disorder (PTSD) and depression than those in the general population (Geronazzo-Alman et al., 2017; Walker et al., 2016), but it has been evidenced that they also suffer from mental health issues, such as suicidality, anxiety, alcohol use, and sleep disturbances (Jones, 2017). Despite the higher rates of mental disorders, research has shown that a FR's resilience levels can help reduce or mitigate mental health issues (Joyce et al., 2019). Chapter One includes a summary of the previous research conducted on FRs' unique job requirements and the propensity of mental illness in this population. This is followed by an explanation of the purpose of this study and how this study can offer insight into the resilience factors that serve to promote mental health. Additionally, terms and concepts are defined as they relate to this study.

Background

The unique occupation of a FR requires being exposed to repeated traumatic situations, such as serious injuries, violence, and even death, at higher rates than most other professions. As a result, it was not surprising to recognize that FRs are at a higher risk for developing PTSD (Lewis-Schroeder et al., 2018; Tjin et al., 2022). Although PTSD has been the most common mental health diagnosis for a FR, there has also been a prevalence of anxiety and depression

(Abraham et al., 2021; Huang et al., 2022), substance use disorders (Bonumwezi et al., 2022), and suicidal thoughts and behaviors (Boffa et al., 2017; Papazoglou, 2017; Ringer et al., 2021; Tiesman et al., 2021).

To best understand what this population experiences in their line of work, it was important to get a bird's-eye view of the calls a FR responds to. In looking at the 2021 statistics of the eighth-largest city in the San Francisco Bay area, Concord, California, the top four categories that the local police department answered consisted of over 3,000 calls reporting thefts, over 1,300 assault calls, 936 drug and narcotics calls, and 825 vandalism calls (City of Concord, 2023). Combined calls among local fire departments consisted of 33,000 fire/ambulance calls, over 27,000 ambulance calls, and over 2,000 exterior/vegetation calls, among others (Contra Costa County Fire Protection District, 2023).

Due to the unique traumatic exposure FRs experience, it was important to understand the effect that this has on their mental health. Not only do FRs experience chronic traumatic situations, but they are also required to balance working long hours with irregular sleeping and waking schedules (Brown et al., 2020). The stigma associated with this population seeking mental health help can also contribute to poor coping and harmful behaviors while on duty (Joyce et al., 2019). Furthermore, high exposure to dangerous situations, along with experiencing secondary trauma, compassion fatigue, and burnout, can adversely affect the FR's emotional, behavioral, physical, and spiritual makeup (Burnett, 2017).

As the category of FRs begins to include such helping professions as emergency room personnel, coroners, dispatchers, mental health professionals, and healthcare workers, every state is provided with its own definition of FRs. California, for example, categorizes a FR as a police officer, firefighter, rescue worker, or any individual who responds with first aid or medical

assistance as their occupational duty or as a volunteer (Bricker et al., 2013). Even with a broad category of FRs, it has not been unusual for individual departments to experience short staffing due to a variety of special circumstances, such as injury, burnout, or medical leave. This adds an additional layer of responsibility on others to work for days at a time and be required to pick up additional shifts (Jones et al., 2018).

This current study was based on prevention and postvention theories, secondary/vicarious trauma theory, and biological factors theory. Prevention and postvention recognize FRs as being more vulnerable to psychological trauma and that their unique cultural experiences should be incorporated into prevention and treatment modalities and have a focus to promote mental health (Lanza et al., 2018; Marks et al., 2017). Postvention, introduced by Shneidman in 1969 and later in 1972 by Cain, posits that a FR's coping and developing social connections can help in the processing of traumatic events (Andriessen, 2014). Secondary/vicarious trauma theory identifies three of the most interchanged terms of traumatic stress, compassion fatigue, and burnout as being common for those who are responsible for helping others during a traumatic experience and when their own mental health is compromised (Howard & Navega, 2018). The final theory, the biological factors theory, is closely related to Vygotsky's 1962 theory of higher mental processes. The biological factors theory supports the concept of the individual's higher cognitive functioning and logical thinking as a result of early learning, observation, and proper social interactions (Demirbaga, 2018).

In addition to the pressures and chronic traumatic experiences FRs endure, current research has identified females in the FR role as another risk factor, due to females experiencing compassion fatigue and burnout at higher rates than males who serve in the same roles (Frazer et al., 2022). Frazer et al.'s (2022) research also purported that female FRs report more harassment,

assaults, hostility, and reduced support within their departments. Another risk factor discussed was the personal violence that FRs incur from victims, the community, and bystanders. Moreover, FRs experience threats, physical attacks, having objects thrown at them, and being shot at. Likewise, Murray et al. (2019) found that over 50% of those who serve as emergency medical services (EMS) FRs reported that they experienced verbal or physical abuse while on the job.

Historical Context

The concept of PTSD was first recognized by the American Psychiatric Association (APA) in 1980 with the publication of the Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (DSM-III). It was at this time that PTSD was in response to the psychological injuries sustained by Vietnam War soldiers and the effect that the traumatic event had, which resulted in symptoms that were incapable of being suppressed (Jones, 2019). Flannery (2014) explained that the idea of psychological trauma was somewhat misunderstood in American history and was more frequently referred to in war zones as "soldier's heart" and "shell shock." It was not until more recently that the study of trauma introduced the term PTSD; however, it focused more on combat and rape victims, with very little attention given to the trauma research of the FR population (Flannery, 2014).

Problem Statement

A meta-analysis that consisted of over 20 studies estimated that 10% of emergency service workers worldwide currently suffer from PTSD. This far exceeds the PTSD prevalence in the general population (Milligan-Saville et al., 2018). Along with this staggering number has been a variety of other mental disorders, such as depression, anxiety, acute stress disorder, adjustment disorder, physical complaints, and substance use (Milligan-Saville et al., 2018).

Comorbidity of other psychological disorders has been one of the most noteworthy findings when researching PTSD among FRs. In Bryant's (2022) 2021 book, *Treating PTSD in First Responders: A Guide for Serving Those who Serve*, the author stated that the most common disorders that coincide with PTSD are "depression, anxiety disorders, and substance usage" (p. 15). Of particular concern has been the comorbidity of PTSD and suicidality (Bryant, 2021; de Lyra et al., 2021; Finney et al., 2015; Henderson, 2020; Ringer et al., 2021). It was also noteworthy to consider that a FR may develop PTSD, which then causes them to be more susceptible to other disorders or the other way around (Bryant, 2021).

Peer-reviewed research has supported the correlation between FR job duties and psychological disorders. The term "resilience" has been identified as being able to recover from adversity, and it has been associated with those who have been successful at returning to a stable or improved state after adverse conditions (O'Neil & Kruger, 2022). Research has also supported findings that individuals have worked in high-stress environments without developing PTSD or other disorders (Pink et al., 2021; Wild et al., 2020). Thus, the question in current research was being able to identify if resilience is a fixed or explicit trait and if it is something that can be trained or developed (Crane et al., 2022; Denkova et al., 2020). Little research has provided understanding as to what resilience factors help FRs to maintain mental health throughout their careers in their designated fields.

Purpose Statement

The purpose of this quantitative, correlational study was to examine the relationship between FRs and the resilience factors in place that have promoted mental health. In this study, the dependent variables were depression, anxiety, substance use, and PTSD. The independent variable was resilience factors. The specific and unique stressors that a FR experiences on a daily

basis were examined, along with the corresponding levels of psychological distress reported by the FR population (Abraham et al., 2021; Huang et a., 2022; Jarero et al., 2019). Psychological distress included, but was not limited to, PTSD, depression, anxiety, substance use, and suicidal ideation. Research had assumed that resiliency and resilience factors can play a vital role in the mental health of a FR. Due to the high rates of psychological distress among FRs, understanding the relationships between their unique job requirements, mental illness, and resilience was important to ensure the overall well-being of FRs and to recruit new individuals to the FR family. Participants were selected from FR agencies in California.

Significance of the Study

This study was useful from several empirical and pragmatic perspectives. The results of this study are useful in helping FRs as they serve their communities and maintain their overall mental health. By understanding resilience factors that promote mental health among FRs, department heads and trainers that work with those on the frontlines can develop the best practices to support the FR population and utilize a training model that is beneficial to the FRs as well as to the community. Moreover, FR departments can utilize the results of this study to design training and support programs to not only aid those who are currently serving as a FR in the community, but they can also use the results to implement pre-service training and screening to help incoming FRs develop resilience factors that will serve as a means of mental health as they serve in their role.

The sample population that was used in this study was of particular significance. Most of the previous research has focused on the PTSD diagnosis that a FR is currently reporting (Lawn et al., 2020) or has focused on more of the treatment side of mental illness (Anderson et al., 2020; Greinacher et al., 2019). Almost 70% of emergency medical providers have reported that

they do not have enough time to process traumatic events prior to moving on to the next call, which leaves them with symptoms of depression, posttraumatic stress symptoms (PTSS), suicidal ideation, and a variety of other psychological conditions (Substance Abuse and Mental Health Services Association [SAMHSA], 2018). Since every community should desire that their FRs be in optimal psychological condition, it is the duty of those who hire, train, support, and educate the FRs to understand the resilience factors that can help this valuable group of individuals to preserve mental health throughout their careers (Andrews et al., 2022).

Research Questions

This study answered the following research questions:

RQ1: How do first responders score on resilience traits when compared to scores on the PCL-5?

RQ2: How do first responders score on resilience traits when compared to the BDI?

RQ3: How do first responders score on resilience traits when compared to the BAI?

RQ4: How do first responders score on resilience traits when compared to the ASI-SR?

RQ5: Which factors are better predictors of resilience?

RQ6: Does the absence of resilience factors increase the risk of distress?

Definitions

First responder (FR) – Can include police officers, firefighters, ambulance personnel, and search and rescue personnel, among many others (Velazquez & Hernandez, 2019).

High-risk population – "One of the few occupations where individuals are repeatedly placed in high-stress and high-risk situations" (Velazquez & Hernandez, 2019, p. 711).

Psychological distress/trauma/disorders – Evidenced by an individual's physical and psychological response to witnessing events, which include actual or threatened death, serious

injury, or the threat to self or others that results in intense fear of helplessness (Flannery, 2014). It can be defined by secondary trauma, depression, anxiety, substance use, sleep disorders, or suicidal ideation (Hallinan et al., 2019).

Resilience – "The trait-like capability of maintaining normal psychological functioning in the face of adversities or challenging life conditions. It is associated with the ability to interact flexibly with the environment and use personal resources effectively" (Tucker, 2021, p. 3).

Resilience factors – Used interchangeably with "wellness," it is the perception that situations can and will have a positive outcome. Can be defined in six dimensions: self-acceptance, social relationships with others, personal growth, purpose, autonomy, and mastery of one's environment (financial wellness, personal health, safety, and career development). An overall high quality of life (O'Neil & Kruger, 2022).

Chapter Two: Literature Review

Overview

The purpose of this correlational study was to understand how resilience factors can promote mental health in first responders (FRs) in California and to allow researchers, trainers, and mental health professionals to have deeper insight and understanding of the role that resilience can play in the overall mental health of those on the frontlines. The study included examining the influence of resilience factors on those who have served in their role as a FR and who do not meet the criteria for depression, anxiety, substance use, or posttraumatic stress disorder (PTSD) according to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5).

All too often, it has been expressed that it is not only normal but also expected that those who serve as FRs are going to experience symptomology of at least one mental illness while serving in their occupation. This, unfortunately, was something that has not been limited to only one community, but was something that has also been recognized as a nationwide issue. In the 2018 Supplemental Research Bulletin, the Substance Abuse and Mental Health Services Association (SAMHSA) estimated that 30% of FRs will develop a behavioral health condition, such as depression or PTSD. Findings have shown that firefighters report higher rates of suicide attempts and ideations than the general population, and 125–300 police officers will commit suicide yearly (SAMHSA, 2018). Factors that have been identified that are believed to contribute to the alarming statistics are that this population responds to stressful, risky, high-paced calls, which eventually leads to the lack of ability to integrate the experiences. Additionally, FRs are believed to be at elevated risk due to certain conditions, such as occupation-related dangers, access to firearms and other weapons, capability to commit suicide, erratic work schedules,

stigma related to seeking mental health, hyperfocus on helping others before helping themselves, high-risk responsibilities, job transitions, employment at small departments with limited resources, and previous trauma experiences (Stanley et al., 2016). According to SAMHSA (2018), in one study almost 70% of EMS providers reported that they did not have enough time to recuperate or process traumatic events prior to moving on to the next, which leads to depression, posttraumatic stress symptoms (PTSS), suicidal ideation, or a variety of other psychological conditions, with depression being reported in almost 7% of EMS professionals and higher rates of depression among professional firefighters as compared to volunteer firefighters. Binge drinking, PTSD, depression, and suicide attempts (and ideation) were higher among male career firefighters compared to volunteer and female career firefighters. Although females make up a little over 5% of the total number of firefighters, over 80% reported that they have smoked, over 22% reported being current smokers, almost 90% reported having consumed alcohol in the past month, almost 40% reported binge drinking alcohol, and 4.3% reported driving while being intoxicated (SAMHSA, 2018).

This chapter addresses the theoretical framework that guided this research and the literature that supported this study. Although much of the research was focused on depression, anxiety, substance use, and PTSD that FRs experience, the emphasis and overall purpose of the research was to focus on the resilience factors that are present that are believed to have helped the FRs in avoiding the diagnosis of these disorders.

Theoretical Framework

First responders who suffer from PTSD are at a higher risk for other mental health comorbidities, and their work is adversely affected (Robertson, 2019). Out of 28 studies conducted with over 20,000 rescuers, the pooled current prevalence of PTSD was 10%. In

comparison, Asia had a higher estimated prevalence than Europe; however, they were not higher than the estimates of North America (Berger et al., 2012). Much literature has been dedicated to identifying that employees from FR agencies are at high risk, not only for developing PTSD, but also that they are a high-risk population for experiencing vicarious traumatization, depression, anxiety, substance use, and suicidal ideation, along with many other negative impacts (Hallinan et al., 2019).

This current research was based on the theory that FRs possess resilience factors as identified and described by Denkova et al. (2020), and Thompson and Drew (2020), which suggested that resilience can promote stress management and well-being without the use of pharmacological interventions (Wild et al., 2020). Continued research has supported a positive relationship between FR resilience factors and lower-to-no symptomology of depression, anxiety, substance use, or PTSD (Joyce et al., 2019). Several theories that have been the focus of FRs and the unique trauma exposure they experience include prevention and postvention theories, secondary/vicarious trauma theory, and biological factors theory.

Prevention and Postvention Theories

Prevention programs are designed for FRs and recognize that this population lives under the stereotyping of being among those who do not have a need for mental health care. Prevention usually focuses on the unique experiences of the higher rates of trauma exposure, even though FRs seek formal therapeutic treatments at lower rates, due to the stigmatization about breaches of confidentiality, fear of disclosing weaknesses, perceptions of formal therapy, and the need to maintain a level of reputation (Casas & Benuto, 2022). Programs are designed and tailored to address the fact that FRs are very vulnerable to psychological trauma and must be able to process that within their own unique cultural experiences (Lanza et al., 2018). Most of these training

programs are designed to help in the prevention of stress injuries among FRs and to promote psychological well-being (Marks et al., 2017).

Prevention techniques have taken on unique and unusual styles in order to adapt to this unique high-risk population and to also make prevention more accessible. The Warr;or21 program has developed a 21-day approach aimed to increase the FR's inner strength by tapping into resilience factors and promoting mental health (Thompson & Drew, 2020). Each day, over the course of 21 days, a FR receives a single keyword (e.g., grit, adapt, appreciate, compassion, and peace), to guide their mindsets and practices for the day, along with utilizing a workshop and participating via a private classroom setting. The keyword, along with daily quotes, practiced breathing, short readings, a reflection for the day, which addresses the keyword, and an evening gratitude practice has been shown to increase healthy sleeping habits, post-traumatic growth, better life satisfaction, and less symptomology of depression (Thompson & Drew, 2020).

Another unique approach has been to utilize the FR's own support network (e.g., friends and family) to provide early intervention. O'Toole et al. (2022) discussed the current intervention/prevention programs being those originally designed for military psychiatry and are based on psychoeducation and crisis intervention. These authors suggested that, because of the unique culture of the FR, peers are used more in the discussion, but there are times when peer support is not available. Having an accessible means of intervention via the support of friends and family who have been properly trained in crisis intervention and psychological first aid will promote the well-being of the FR and encourage social support (Lawn et al., 2022; O'Toole et al., 2022).

One of the more unfamiliar terms in the prevention/postvention theory is that of postvention. Andriessen (2014) identified the pioneer of postvention as Shneidman in 1969, later

followed by Cain in 1972. These theorists focused solely on the impact that suicide has on the survivors, as the individual who commits suicide places their psychological skeletons in the survivors' emotional closet and leaves them obsessing about the reasons for the suicide (Andriessen, 2014). Prevention and postvention theory was best described in Lanza et al.'s (2018) work as follows: Prevention is defined as being ready and prepared for traumatic events, and postvention is defined as an increase in coping and developing social connections after traumatic events. This theory relates to FRs in that not only do FRs respond to suicide scenes, but they also experience suicidality within their own occupation at alarming rates (de Lyra et al., 2021), while also responding to traumatic events, such as natural disasters, mass shootings, and other manmade disasters.

Although most of the attention has focused on the civilian individuals who have been affected by tragedy and disaster, and some research has acknowledged the need for schoolchildren to receive much-needed attention as communities address the trauma of school shootings, Lanza et al. (2018) explained that less attention has been given to those who serve as the FRs to these horrific events. While the latter population has been referred to as "heroes" in many cases, they continue to work under stressful and almost unmanageable conditions, and many times this work takes place within their own communities. Prevention, intervention, and postvention theories address specific organizational characteristics since the programs should be tailored to the specific FR populations who are at a higher risk of developing occupational stress injuries (Antony et al., 2020).

Vicarious Traumatization/Secondary Traumatic Stress Theory

The second theory that guided this research was the vicarious traumatization/secondary traumatic stress theory. Three major concepts that are used interchangeably are secondary

traumatic stress, compassion fatigue, and burnout (Howard & Navega, 2018). Howard and Navega (2018) defined secondary trauma as a condition when an individual helps a trauma survivor and experiences their trauma in a way that causes emotional disruption, resulting in them becoming an indirect victim of the trauma; compassion fatigue is more of a process that takes place over time when individuals who help others are unsupported, and their emotional state is compromised. Some of the most notable assessments used are the Secondary Trauma Questionnaire (STQ), which also measures compassion fatigue; the Compassion Satisfaction/Compassion Fatigue Self-Test (CS/CFST), which was developed from the Compassion Fatigue Self-Test (CFST) and measures the three subscales of compassion satisfaction, compassion fatigue, and burnout using 66 items and a 6-point Likert scale; and the Secondary Traumatic Stress Scale (STSS), which is a 17-item assessment, that can be combined with the burnout scale to be used for FRs who are working with traumatized individuals (Greinacher et al., 2019).

In 1995, Dr. Charles Figley identified the concept of secondary trauma stress as the resulting behavior from the knowledge of a traumatic event experienced by helping (or desiring to help) another individual who has experienced trauma or suffering (Bride et al., 2007). Burnett (2017) also described the concept of compassion fatigue as being synonymous with related terms, such as vicarious traumatization, secondary traumatic stress, and secondary traumatization. Compassion fatigue is defined by Burnett as being evidenced by an individual's emotional, behavioral, physical, spiritual, interpersonal, and cognitive reactions due to having a reduced capacity for sympathy or empathy in relation to working with a traumatized individual. The effects of suffering from compassion fatigue include emotional exhaustion, variations in the

helper's core beliefs and cognitive schemas, alcohol use, intrusive thoughts and imagery, avoidance and numbing, and other possible physiological symptomology (Burnett, 2017).

Burnout, or job/occupational burnout, is the result of continued exposure to situations that result in emotional and/or physical exhaustion, depersonalization, and a reduction in personal achievements, which is evident in a decrease in the quality of life (Howard & Navega, 2018). This theory may be best understood as conceptualized from McCann and Pearlman's 1990 constructivist self-development theory, which posits that both negative and positive changes after a traumatic event are results of how an individual adapts and makes meaning of their experience and how empathetic engagement can result in distorting one's sense of meaning and belief system (Bride et al., 2007; Saakvitne et al., 1998). More incapacitating than compassion fatigue is burnout, which is work-related and due to the toll of emotional exhaustion. Burnout is the result of situations that are emotionally demanding and are evidenced by feelings of depletion and fatigue, reduced feelings of accomplishment, negative self-evaluation, and a reduction in job effectiveness (Burnett, 2017).

Being a FR is one of the professions that witness consistent traumatic incidents of damaging and cruel treatment experienced by others, in which the FR's worldview is altered through malicious and hostile events (Molnar et al., 2017). Most research conducted on vicarious and secondary trauma has not delineated the effects of secondary trauma as compared to experiencing the trauma firsthand. Surprisingly, Molnar et al.'s research identified higher rates of vicarious/secondary trauma in volunteer rescue workers as compared to their professional counterparts and lower rates of PTSD in responders as compared to civilians who experienced the same trauma event. Suggestions for these findings included the difficulty in collecting accurate data due to the stigma attached to FRs self-disclosing their distress and due to the lack

of one single valid assessment that covers the full range of vicarious/secondary symptomology utilizing clear terms (Molnar et al., 2017). Some of the work involved in using secondary trauma theories has included establishing a precise definition of what a FR is, delineating between the previous research that has clustered FRs according to specific occupations, and the inconsistent use of secondary trauma, vicarious trauma, and compassion fatigue terms (Greinacher et al., 2019).

Biological Factors Theory

One of the questions about an individual's risk or resilience capacity is how a traumatic experience can leave a lasting influence for years or decades after the actual event has taken place and lead to mental illness much later in life. Traumatic events have lasting negative effects on the plasticity potential of genes, resulting in the inability to adapt to situations, and thus increasing the risk for psychiatric disorders (Ryan et al., 2016). In consideration of the biological factor theories, it was important to understand how an individual who has experienced trauma during their early developmental stages of childhood is affected differently and more profoundly by traumatic experiences in adulthood (Laricchiuta et al., 2023). The article by Laricchiuta et al. (2023) stated that trauma has a lasting effect on an individual's neuronal, endocrine, immune, biochemical, genetics/epigenetics, and gut microbiome components. To repeat what Dr. van der Kolk (2014) stated in *The Body Keeps the Score*, trauma affects the body, mind, and brain. In this viewpoint, PTSD continues to defend against something that took place in the past (van der Kolk, 2014).

Biological factors can be connected to the theory of higher mental processes proposed by Vygotsky's ideas in 1962 (Adams, 2006). Vygotsky viewed the individual's culture and society as the determining factors for cognitive development. This theoretical framework describes

social interaction as being fundamental on the social level and on the individual level (Demirbaga, 2018). Higher cognitive functioning, such as perception, focused attention, logical thinking, and intentional memory capacity, is not developed spontaneously, but instead, it is passed through the conduit of learning, observation, and appropriate social interactions (Demirbaga, 2018). Adams (2006) discussed the revision of Vygotsky's thinking to highlight the importance of emotion and how individuals react to specific circumstances. Vygotsky identified that although two individuals experience the same situation (or objective context), each person may experience and interpret the situation in completely different ways. The situation, according to Vygotsky, is refracted through that specific individual's history and personality. Furthermore, the same individual can experience the same situation but at different times and can interpret it differently, due to the changes in that individual over time (Adams, 2006).

According to Clinton et al. (2021), biological factors were considered in a laboratory study using rats by testing the temperamental differences, which identified the neurodevelopmental factors that determine an inhibited and stress-vulnerable phenotype. This study suggested that environmental and biological factors are believed to shape an individual's developing brain and forge a path for the development of vulnerability or susceptibility to emotional disorders, such as depression and anxiety. The results suggested that there are inborn differences in deoxyribonucleic acid (DNA) that are observed in those who are more predisposed to anxiety and depression versus those who are not (Clinton et al., 2021).

There has been evidence from research to suggest that everyone is different when it comes to their vulnerability or resistance to mental illnesses, such as depression, anxiety, substance use, and PTSD, due to identified genetic risk factors. The question remained as to whether mental illness is something that can be predicted due to changes in DNA methylation

patterns, or if the change in DNA is the result of the disease itself due to epigenetic processes (Ryan et al., 2016).

Related Literature

First Responders are an At-Risk Population for Symptom Comorbidity

First responders are viewed as a unique population that is at an increased risk for developing mental health disorders, such as stress, anxiety, depression, substance use, suicidal ideation, and suicide attempts (Abraham et al., 2021; Blake, 2022). In many cases, previous trauma situations can be exacerbated during a current trauma experience and result in an increase in PTSD, depression, and suicide risks (Jarero et al., 2019). Abraham et al. (2021) reported that in a study that consisted of over 4,000 FRs, more than 6.5% had attempted suicide. In a 2016 study of 34 FRs cited by Abraham et al. (2021), 18% met the criteria for anxiety, 47% for depression, and 33% for PTSD. Not only are FRs a high-risk population for developing common mental disorders, but they may also experience long-term partial symptomology that is an indication of a prodromal phase to a more severe mental illness (Joyce et al., 2019).

A couple of the most catastrophic events that FRs have been exposed to in the United States include the World Trade Center (WTC) disaster and, more recently, the COVID-19 pandemic. These two major events have provided studies that offer an in-depth look into the physical and mental health conditions among FRs, including depression, anxiety, and stress (Alshahrani et al., 2022; Gibson et al., 2022; Huang et al, 2022). The long-term effects of WTC recovery are not limited to medical conditions, digestive disorders, musculoskeletal disorders, and cancers due to dust and debris exposure; WTC response and recovery efforts have also resulted in long-term psychosocial issues, such as PTSD, depression, anxiety, survivor’s guilt, sleep disturbances, relationship problems, addictions, and risk-taking behaviors, which were

evident even 10 years after the attack (Smith et al., 2019; Yip et al., 2016). When considering the toll that, more recently, COVID-19 took on the nation's FRs, Benincasa et al. (2022) discussed studies conducted that identified FRs and healthcare workers as those who were not only at the greatest risk of being exposed to the virus but also at a high risk of overload and burnout. Those who worked on the frontlines of the pandemic worked with individuals infected with the disease while also experiencing drastic changes within their departments and new safety procedures. This combination contributed to an increase in the psychophysical fear, stress, and burnout that this population experienced (Benincasa et al., 2022).

When looking into the psychological distress that FRs experience, the most notable diagnosis for this population has been that of PTSD; however, there has been evidence that suggested that these individuals also present with distinctive symptoms of panic disorder, somatic problems, relationship difficulties, elevated rates of low mood, suicide, emotional numbing, alcohol abuse, and depression (Bryant, 2022; Caramanica et al., 2014).

In 2015, Finney et al. (2015) identified that, at the time of their study, most of the research conducted on FR psychology was focused on those in law enforcement and the issue of stress and suicide that this occupation and their family experienced. For a period that spanned almost 10 years (between 1992 to 2001), it was police officers who accounted for the largest number of workplace suicides among all occupations; however, little research had been provided to address the issue of suicide among firefighters (Finney et al., 2015). In a study conducted solely on police officers, repeated trauma exposure was associated with an increased risk of PTSD and depression that exceeded twice the amount of that among the general population, poorer quality of life, and an increased risk of accidents, aggression, cardiac-related deaths, substance use, absenteeism, and suicide (Syed et al., 2020). In a study designed for firefighters

who were diagnosed with PTSS, the participants were shown to also have robust relationships with suicidal ideation and suicide attempts (Boffa et al., 2017).

Flannery (2014) highlighted the severity and importance of the issue of substance abuse among the FR population. Flannery stated that substance abuse is a medical problem in and of itself; however, it is also a risk factor among FRs, since many FRs will use substances in order to self-medicate their untreated trauma and symptoms of PTSD. When considering the comorbidity of disorders among FRs, substance abuse, treatment programs, and treatment modalities should all be incorporated to address how the FR uses substances to mitigate traumatic memories and symptoms (Flannery, 2014).

Shift Work as a Risk Factor

Shift work has been recognized as working outside of the normal 9:00 a.m. to 5:00 p.m. workday and describes one-fifth of employees internationally (Brown et al., 2020). However, shift work is accompanied by identified health issues due to the high demands on the individual's sleep schedule, and, for those who engage in shift work, feeling rested can be a challenge (Brown et al., 2020). Shift work is necessary for FR occupations to guarantee that emergency services are provided 24 hours a day (Ogeil et al., 2017). The constant feelings of sleepiness and insomnia associated with these schedules leads to shift work disorder (SWD), which is common among clinically diagnosed sleep disorders, especially among those who serve as police officers and firefighters (Ogeil et al., 2017). It is not uncommon for those who work in FR departments to work for 48 or even up to 96 hours straight (Jones et al., 2018). Jones et al. highlighted the significance of FRs working for days at a time, sometimes taking on an additional shift due to short-staffing or special circumstances. Unfortunately, this comes with the price of getting little to no sleep due to the job requiring that they disrupt their sleep to answer another call. The

question then presents itself as to whether poor sleep quality is a symptom of mental health issues or if mental health issues are contributing to poor sleep quality. Shift work is not only associated with poor sleep quality, waking too early, dozing off at work, falling asleep while driving, and an impaired sense of well-being (Ogeil et al., 2017), but it can also affect the overall physical and mental health of the FR, including a diagnosis of depression (Jones et al., 2018). A significant number of FRs reported that they suffer from SWD, insomnia, obstructive sleep apnea, and excessive daytime sleepiness, with very few reporting that they experience restless leg syndrome or narcolepsy (Huang et al., 2022). Moreover, FRs who report suffering from obstructive sleep apnea were also more likely to develop symptoms of anxiety, depression, PTSD, cardiovascular disease, diabetes, and gastroesophageal reflux disease, while the FRs who reported suffering from insomnia reported also suffering from depression, anxiety, and PTSD (Huang et al., 2022).

Gender as a Risk Factor

In comparing male and female FRs in Australia, studies have suggested that female FRs have experienced compassion fatigue and burnout in greater numbers than their male counterparts (Frazer et al., 2022). Although very little research has been conducted to date that addresses the psychological health of female FRs, suggestions have been made to consider what the female FR experiences within this occupation. Frazer et al. (2022) purported that a female FR may feel a higher emotional interest within the community she serves and may practice a different coping style. Females also reported more verbal and written harassment, hazing, assault, hostile work environments, sexual advances, bullying, and a reduced sense of support when questioned about their work environments (Frazer et al.). When these factors are present along with workplace violence (WPV), burnout, job dissatisfaction, the possibility of intimate

partner violence, and sexual assault, the physical and psychological health of the FR is at stake, and the potential for mental health challenges is increased (Frazer et al., 2022).

Female FRs not only deal with the stress involved in the profession itself, but they also experience higher levels of depression, PTSD, internalizing disorders (mood and anxiety disorders), and suicidal ideation, which may be related to the fact that they have increased physical demands within a male-dominated occupation (Jones et al., 2018). Studies, as indicated by Murray et al. (2019), have shown that female FRs are more likely to encounter physical violence, while male FRs were more likely to encounter verbal violence. This same study suggested that female FRs were at significant risk of experiencing sexual assault, sexual harassment, and verbal attacks; thus, the results of the study found gender to be a risk factor, with females being the majority of the EMS assault-related fatalities (Murray et al., 2019).

In Greinacher et al.'s (2019) systematic review addressing secondary trauma among FRs, three of the studies focused on how secondary trauma is experienced based on age, gender, and ethnicity. Female participants who served as rescue service workers, firefighters, ambulance operators, police officers, or internet child abuse officers reported more symptoms of secondary traumatization compared to their male counterparts (Greinacher et al., 2019).

Danger as a Risk Factor

It has not been unusual for FRs to experience situations in which their own lives are at risk or in danger. In many cases, forms of violence include being threatened, cursed at, punched, slapped, scratched, bit, hit with an object, stabbed, shot, or shot at (Murray et al., 2019). A 2019 study conducted by Murray et al. identified that 57%–93% of EMS participants stated that they had experienced a situation of verbal and/or physical violence while on the job. Furthermore, among the 1,789 participants identified in a 2013 study of nationally registered emergency

medical technicians (EMTs), almost 70% reported having experienced at least one form of a physical and/or verbal violent act within the past year, and 44% reported having experienced one or more forms of physical violence (Murray et al., 2019).

First responders answer calls to critical incidents and face the uncertainty of their own physical safety. They are consistently facing increasing levels of WPV (e.g., being threatened, intimidated, injured, or abused) in a way that directly affects their safety and well-being within their own communities (Brais et al., 2023). For their study, Brais et al. designated the term WPV to include any behaviors, physical or verbal, actual or threatened, that are directed at FRs. The reviews provided in Brais et al.'s research showed that there are elevated levels of WPV among those who serve as EMTs, paramedics, and firefighters, with some participants reporting that they experienced at least one incident of a verbal or physical assault. Brais et al. (2023) shared that, in a sample of Canadian FRs, over 70% stated that they had been physically assaulted, over 95% had been verbally assaulted, and 63% had experienced threats of violence over the past 12 months.

Stigma Associated with FRs Seeking Help

Help-seeking stigma is one of the greatest barriers to supporting a FR's mental health and well-being. When researching the stigma associated with help-seeking, 90% of participants in a U.S. study stated that stigma was a barrier for them seeking treatment (Smith et al., 2021). Evidence suggested that FRs are reluctant to seek or access mental health services, and instead, participate in maladaptive coping behaviors, such as substance abuse and poor coping, which not only affects their individual job performance but also can result in poor decision-making and harmful behaviors while on the job (Joyce et al., 2019). Not only is there a concern for FRs to seek help, but there is also a debate as to how to effectively address the idea of regular mental

health screening in order to identify early symptoms and reduce the possibility of long-term disabilities, especially for those who are at a higher risk of a mental disorder (Joyce et al., 2019). In Haugen et al.'s (2017) meta-analysis on mental health stigma in FRs, the most commonly reported stigma was the fear that the services would not remain confidential; second, there was the fear that seeking mental health services would have a negative effect on their career; and lastly, there was the fear that there would be judgment from coworkers or administration (Haugen et al., 2017).

A different type of stigma that has been evident in FRs is the belief that what they are experiencing is worked through in their own self-reliance and strength that is associated with the role of their occupation. One of the main barriers to seeking help in a study that included 61 FR participants was that they "cannot show weakness" (Jones et al., 2019, p. 48). The idea of showing weakness is thought to be characteristic of the culture in the FR setting. According to Jones et al. (2019), this may be in part due to strength being not only valued but also necessary for the job; anything else is viewed negatively and can pose a safety risk.

Velazquez and Hernandez (2019) conducted research on previous studies to investigate why police officers do not seek mental health treatment. Their research identified police officers as an at-risk population who work daily in a high-stress environment with exposure to cumulative trauma and try to live up to an unrealistic human quality. The more traumatic the experiences are, according to Velazquez and Hernandez, the more susceptible they are to long-term mental health disorders, such as PTSD and depression. Several components of stigmatization are described, such as a public stigma (identifying how social biases cause an individual to be aware of stereotypes), self-stigma (identifying characteristics that then lead to internalization and disempowerment of those who do seek treatment), label-avoidance stigma (a

form of self-stigma in which the individual ignores the symptoms in order to avoid a diagnosis for mental health treatment), and organizational stigma (when the agency responds to the idea of mental health illness in their officers, whether constructively or negatively; Velazquez & Hernandez). This research coincided with the research conducted by Sanatkar et al. (2022), which identified the presence of self and workplace mental health stigmas observed together in police and emergency service personnel. Some of the behavioral aspects described by participants included anger and/or avoidance from others when filing claims and compensation for work-related psychological injuries (Sanatkar et al., 2022). Unfortunately, even with the mentioned literature, little research has been conducted that has specifically identified the stigma associated with police officers (Velazquez & Hernandez, 2019).

Untreated Trauma Responses

To date, most research focused on untreated trauma responses has identified military personnel as a high-risk group for unprocessed trauma exposure. Due to the upheaval of deployment and the experience of a combat zone, military personnel (and their families and communities) are at risk of developing PTSD (Kearney & Simpson, 2015). Trauma and PTSD have been positively correlated with suicide, depression, substance use, violence, unemployment, lower quality of life, coronary disease, arthritis, asthma, and digestive disorders. Along with these symptoms, Kearney and Simpson (2015) also identified that PTSD affects an individual's spiritual and moral contexts when experiencing trauma-related distress.

Studies have suggested that responding to critical incidents and mass disasters may result in an increased rate of FRs developing PTSD and other psychological trauma, which can present in cognitive, physical, mental, and behavioral components (Bonumwezi et al., 2022; Flannery, 2014; Wilson, 2015), depressive disorders, emotional disturbances, increased risk for spousal

abuse, and a poorer quality of life (Arble & Arnetz, 2016). In addition to emotional disturbances, job stress among FRs has been linked with cognitive difficulties and increased alcohol use (Gross et al., 2006; Gryshchuk et al., 2022). Moreover, FRs are at high risk for chronic mental health problems due to repeated exposure to emergency incidents and daily exposure to traumatic events (Jones et al., 2018; Larsson et al., 2016). Not only does the psychological distress affect the FR, their department, and their family, but it is also a public health concern due to the economic costs involved. Firefighters, for instance, will experience higher rates of occupational injury and fatality as compared to other occupations (Lebeaut et al., 2022). The high propensity of frequent injuries, shift work, physically demanding requirements, and continual exposure to danger can predispose firefighters to acute pain and chronic disability due to musculoskeletal pain, back pain, and sprains (Lebeaut et al., 2022).

To add to the anticipated development of psychological distress, those who experience private or personal stressors, such as unprocessed early-childhood traumatization, not only compromise those around them but are also at an increased vulnerability of developing on-duty traumatization (Behnke et al., 2019). Subclinical PTSD (i.e., not meeting diagnostic criteria) is something that a FR can bring into the occupation without realizing that there is an increased risk of developing full PTSD symptoms along with acute or chronic pain and pain-related disabilities (Behnke et al.). Moreover, PTSD among U.S. firefighters has been estimated to be as high as three times as much as the general population, and it contributes to higher rates of work-related injuries, chronic musculoskeletal disorders, and general chronic pain (Behnke et al., 2019).

Another concerning topic when addressing the high risk of mental illnesses among FRs has been the elevated suicide risk that this population experiences (de Lyra et al., 2021; Henderson, 2020). A study conducted specifically among U.S.-based samples suggested that

police officers and firefighters die by suicide at a higher rate than the general population, and those who are at an even higher risk are those individuals who belong to another subgroup of healthcare professions (Stanley et al., 2016).

In an effort to bring awareness to the risk that this population has for suicidal ideation and completion, North Carolina conducted a research study to identify how many of the state's residents who died a violent death were those who served as FRs in any given field (Austin et al., 2015). Between the years of 2004–2011, 19 EMS personnel, 75 law enforcement officers, and 23 firefighters died a violent death. Of these, almost 75% of them were suicides, and 22% were categorized as homicides. All 19 deaths reported among EMS workers were the result of suicide. This study also highlighted that of the FRs who committed suicide, a larger percentage of them were experiencing intimate partner and/or occupational conflicts simultaneously (Austin et al., 2015). Research has suggested that suicide risk is directly linked to PTSD and that there are certain occupations where this risk may be elevated. There has already been a link established between PTSD and suicide among those who have served in the military and those who work as police officers (Boffa et al., 2017). Boffa et al. also stated that there is a need for research to identify other professions that may experience disproportionately higher rates of suicide. One such occupation that was a concern is firefighters (Boffa et al., 2017).

Since FRs are those who are initially exposed to traumatic events, almost 90% will experience a workplace situation where there is a direct threat to their lives, or they will witness the death and/or horrendous injury of another person. Because of this exposure, police officers' PTSD prevalence rates range from 0%–43%, firefighters' range from 5%–91%, and paramedics' range from 4%–40%. Most researchers have concluded that PTSD symptoms are much higher in FRs than those in the general population, even though the numbers have suggested that the

prevalence is lower in police officers than it is in firefighters and paramedics (Alden et al., 2021).

As FRs utilize a skill (consciously or not) to mitigate occupational stressors, they are tapping into a coping mechanism. An example was provided by Kshtriya et al.'s (2022) article, which identified the use of an expressive suppression strategy called emotion regulation. Using expressive suppression is considered to be a response-focused strategy that is used either during or after a traumatic event. This, however, increases the FR's symptoms of PTSD, major depression, and general anxiety disorder. Findings have shown that a higher occupational stressor, along with a higher level of expressive suppression, is predicted to result in higher levels of mental illness and disorders (Kshtriya et al., 2022).

Treatment and Early Intervention for First Responder Mental Illness

Assessments, such as the PTSD Checklist for the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (PCL-5; Robertson, 2019), Clinician-Administered PTSD Scale for DSM-5 (CAPS-5; Lewis-Schroeder et al., 2018), Impact of Event Scale-Revised (Lee et al., 2017), and the Response to Stressful Experiences Scale (RSES-4; Ponder et al., 2021), have been designed to measure PTSD and PTSS and identify multiple factors of trauma in rescue workers.

In an effort to effectively treat psychological impairment among the FR population, treatment modalities, such as trauma-focused cognitive behavioral therapy (TF-CBT), eye movement desensitization and reprocessing (EMDR), interpersonal psychotherapy (Alsharani et al., 2022; Morris et al., 2022), critical incident stress debriefing, critical incident stress management, peer support, psychological first aid, trauma risk management (Anderson et al., 2020), internet cognitive-behavioral therapy (ICBT; Beahm et al., 2022), and prolonged exposure (PE) therapy (Lewis-Schroeder et al., 2018), which is the gold standard of PTSD

treatment, have shown to reduce symptoms of psychological distress. More unique styles of treating mental illnesses have included innovative approaches, such as daily text messaging services called Text4PTSI and Text4Well-being. These were designed and studied to prevent and reduce the severity of PTSD, posttraumatic stress injury (PTSI), stress, anxiety, and depression among FRs (Obuobi-Donkor et al., 2022). In other studies, strategies, such as debriefing, team building, and being prepared, served as helpful and effective interventions (Greinacher et al., 2019).

Factors, such as belongingness and social support from supervisors, coworkers, and friends/family, were examined by Stanley et al. (2019) to determine if they were associated with lower PTSD symptom severity among firefighters. Assessments used for this study included the Interpersonal Needs Questionnaire, PTSD Checklist-Civilian Version, Generic Job Stress Questionnaire, and the Life Events Checklist for the DSM-5. Among all sources of social support (e.g., supervisors, family, friends, and coworkers), only the support from supervisors was significantly associated with lower PTSD overall symptom severity ratings among firefighters (Stanley et al., 2019).

Cohesion can help to mitigate the harmful impact of FR trauma and may even serve as a proxy for yet another vital protective factor, which is social support. A study conducted by Smirnova et al. (2022) suggested that at least a perceived cohesion can promote psychological health among FRs, even after the factor of social support is controlled. Although the findings revealed that cohesion does not act alone as a proxy for social support, it can benefit FRs and can lay the groundwork for interventions that can improve their mental health, reduce stress, and help to build psychological resilience (Smirnova et al., 2022).

Although the therapeutic approaches and interventions mentioned previously have been proven to reduce symptoms, they are more of a response to a diagnosis and not a prevention of the diagnosis. These interventions may be only partially successful due to being utilized only after there has been repeated exposure to the trauma experienced from their work, rather than before, in order to help them cope with the trauma (Wild et al., 2018).

To highlight the anticipation of FRs developing psychological disorders, specific measures have been designed to serve as a predictor of depression and PTSD in FRs (Geronazzo-Alman et al., 2017). However, very little research has suggested that someone who is a FR can serve years in their occupation and not experience symptoms of depression, anxiety, substance use, or PTSD, especially when experiencing repeated exposure to traumatic situations. There has been an agreement among researchers and health professionals that there is a dire need for more research on the prevention of mental illness within high-risk occupations. To date, very little robust research has been provided to explain how to apply interventions that can be used in real-world settings (Skeffington et al., 2016). The ability to serve on the frontlines as a FR without suffering from mental illness should be a concern to every community that depends upon this vital population to be ready to serve at a moment's notice. Thus, the primary hypothesis of this study was that there are resilience factors that can promote mental health and wellness in the FR population.

Identifying Resilience Factors

Plenty of research has concluded that working in a high-risk environment can either create or worsen mental health problems; however, there are those who have worked in these environments and have performed well without developing any mental health disorders. In O'Neil and Kruger's (2022) study, this was referred to as "resilience," which is the ability to

respond to adverse events effectively and thrive during extreme stress. However, it was noted that this capability is different between individuals and environments and what is viewed as extreme stress. A suggestion pointed out in this study was that resilience should be studied within adverse conditions, as an outcome, and as a process. In other words, resilience should be viewed as the final state by which an individual has been able to recover from adversity and end up either the same or better off than prior to the adverse conditions. O'Neil and Kruger also defined resilience as comparable to wellness, although wellness is the perception of the quality of life in mental, physical, spiritual, social, and environmental areas. The authors also suggested that resilience and wellness can be used interchangeably when it comes to an individual's self-acceptance, social relationships, personal growth, purpose, autonomy, and mastery of their environment. To apply this study to the question of resilience factors that avoid the onset of PTSD, one must ask why some people can successfully thrive and function despite traumatic experiences, whereas others have been diagnosed with PTSD. O'Neil and Kruger (2022) stated that it is the way some individuals strengthen and prepare themselves for adversity.

Russo et al. (2012) shed insight on the concept of resilience and how it plays a role, especially in relation to PTSD, stress, and trauma. Resilience is the exposure to extraordinarily stressful situations, and yet the individual is able to maintain normal psychological and physical functioning in order to avoid a mental illness diagnosis. Human resilience allows for a capacity to avoid negative consequences that would otherwise compromise well-being both psychologically and physically (Russo et al., 2012). This approach to resilience can now be studied in the training of FRs on successfully navigating their responsibilities without the expectation of experiencing PTSD symptoms fully or even partially.

Since stress takes place over many of life's stages, the ability to develop resilience is readily available. In the aftermath of adversity and trauma experiences, as individuals learn to adapt and develop coping skills, the building of resilience takes place. Of particular importance is that the result of encountering a trauma-inducing situation and learning to cope with moderate levels of stress can help facilitate a sense of mastery and, thus, the development of resilience. As Russo et al. (2012) pointed out, there has been great evidence that stress resilience is higher in certain occupations, such as rescue workers, and there is a possibility that specific therapeutic approaches (e.g., exposure therapy and CBT) can be applied to at-risk populations to increase resilience and prevent the development of certain disorders.

A key component to addressing resilience training early in the FR's career is to understand how the FR may have inaccurate ideas of mental health and mental help programs. For instance, FRs may be experiencing self-stigmatization, which is the avoidance of treatment seeking and treatment adherence, due to the perception that someone who is receiving help for PTSD is weak and unable to perform their job duties without being affected by the trauma (Crane et al., 2022).

The research question posed was: What resilience factors do FRs have in place that have been successful in maintaining mental well-being? This was important to investigate to determine if resilience can then be taught or trained to FRs and if can it help them avoid psychological distress altogether, or if resilience factors are limited to reducing and alleviating symptoms once there has been a diagnosis of a mental disorder.

Crane et al. (2022) addressed the conflicting opinions of resilience as either being implicit (i.e., a fixed trait), explicit (i.e., can be developed), binary (i.e., you have resilience or you don't), or on a continuum. To consider resilience for pre-training FRs, the implicit theory

suggested that the training can be influenced by the way the material is applied and if the FR is open to the challenges that change offers. The suggestion was made that moderate levels of life stressors and even adversity can help build the strength of resilience throughout one's lifetime. The study referenced by Crane et al. highlighted two clusters of participants: those who viewed mental toughness as being developed (i.e., malleable), and those who were hesitant about the plasticity of mental toughness. Interestingly to note, though, those participants who were in the malleable cluster were reported as being much higher in their job performance (and creativity) than those who viewed mental toughness as a fixed characteristic (Crane et al., 2022).

When addressing whether early resilience training protects against psychological disorders, it was important to be able to identify what, if any, resilience factors are already in place. According to the research conducted by Denkova et al. (2020), there are different viewpoints as to whether resilience is a stable personality trait or if it is a malleable characteristic that can be trained and enhanced among at-risk populations. An effort was made to determine whether there were efficient ways to train resilience in those who otherwise would not have this trait to combat stressors. When considering resilience training that has taken place in work settings, it has been noted to increase mental health, well-being, and psychosocial functioning, especially when it was combined with mindfulness-based and cognitive-behavioral approaches. However, as noted in this research, the instruments that these training programs instantiate have not been well-researched or studied (Denkova et al., 2020).

The stress that COVID-19 has placed on the nation's FRs prompted the development of the Extension for Community Outcomes (ECHO) program to address stress management and strategies for stress reduction (Katzman et al., 2021). The goal of the program was to offer FRs techniques on self-care and resiliency, while also developing practices to address and mitigate

the stress from traumatic experiences. The main components of the First Responder Resiliency (FRR) ECHO included training in psychological first aid, crisis management debriefing, critical incident debriefing, and information on self-care skills (Katzman et al., 2021). In this resilience study, the FRs' overall stress levels were not reduced; however, this unique population of workers reported feeling more confident in utilizing psychological first aid, using stress management skills, and being able to assist their peers who also needed mental health help. The participants also reported that they were taking time for self-care (Katzman et al., 2021).

Resilience Factors as a Proponent of Mental Health

When addressing the topic of resilience factors, several things came to light. First, most of the participants in the most current research came from the FRs who served during the WTC attacks against the United States. Another large group of research participants included those who have worked on the frontlines during the COVID-19 pandemic. Second, most research conducted has used terminology, such as attenuates, lessens, reduces, and decreases, which communicates that the resilience factor studied is being used with participants who already show some or all of PTSD symptoms or other psychological disturbances. Third, much of the current research conducted on the topic of PTSD and resilience has been limited to military personnel.

According to past research, it has been clearly identified that FRs experience psychological disorders, especially PTSD, at a higher percentage than those in other occupations. Most research to date has sought to identify a resilience technique that can be incorporated into FR training as an attempt to successfully serve as a FR without experiencing the effects of PTSD. This led to the question of whether FRs who have worked in their field for several years and who have never experienced PTSD have internal resilience factors in place that can be identified and incorporated into early training programs for incoming FRs. Very little, if any,

research has been conducted to assess what current FRs have in place that has kept them from experiencing distress, including partial or full PTSD symptomology; however, there has been a wealth of information that suggested that resilience can be a key factor in not only reducing the symptoms of PTSD, but that resilience may also help to reduce the length of time a FR must experience negative symptoms. Burnett (2017) suggested that the right resilience factors can moderately mediate the association between compassion fatigue and burnout among FRs. The study suggested that no other studies have attempted to duplicate and verify the research results of a previous study conducted by Burnett and Wahl in 2015 (Burnett, 2017). The Professional Quality of Life Scale, the 14-item Resilience Scale, the Response to Stressful Events Scale, and a demographic questionnaire were used to measure the negative correlations between compassion fatigue, burnout, and resilience, showing that resilience may serve as a robust mediating variable between compassion fatigue and burnout (Burnett, 2017). Greinacher et al. (2019) supported the idea that a majority of FRs will develop symptoms of secondary trauma. They stated that studies have shown that resilience factors, such as perceived social support, have a positive impact on FRs more than received support. Other resilience factors identified in Greinacher et al.'s (2019) study consisted of internal control, self-efficacy, collective efficacy within the organization, mindfulness, and engagement.

The Connor-Davidson Resilience Scale (CD-RISC-10) was used with firefighters to measure any resilience factors that were present that would help them tolerate change, personal problems, illness, pressure, failure, and painful emotions. The participants who showed higher adaptive qualities of resilience may prove to have protection from future psychological distress. This study suggested that focusing on the resilience factors that enhance adaptiveness may be

what improves their ability to manage their traumatic occupation without experiencing any symptoms of disorders (Joyce et al., 2019).

As a response to the limited research conducted around the prevention of PTSD among EMS personnel, a resilience-training program was conducted with fire and emergency participants in Western Australia (Skeffington et al., 2016). Rather than continuing to focus on secondary interventions and treatments, tests, and psychological debriefing, this study used the Mental Agility and Psychological Strength (MAPS) training program as part of the recruit curriculum as an intervention for the primary prevention of PTSD, and it concluded that the MAPS training on social support or coping strategies on the prevention of mental illness was not significant (Skeffington et al., 2016).

There have been several suggestions conducted by research to attempt to thwart the onset of psychological distress. One was the importance of a FR having a strong support system in place and implementing an individual style of coping strategies (Anderson et al., 2022; Obuobi-Donkor et al., 2022). Anderson et al. explained that there was no one-size-fits-all approach to coping with the traumatic experiences that public safety personnel work with; however, coping strategies have been shown to be beneficial to mitigating the long-term psychological effects of the occupation's exposure to trauma. Further research attempted to connect the concept of FRs experiencing higher levels of PTSD, due to their sedentary lifestyles. Anderson et al.'s research also suggested that physical activity has helped to reduce the symptoms of depression and anxiety, while making an improvement in sleep quality, reducing alcohol dependence, and reducing PTSD symptoms. Along with Anderson et al. (2022), McKeon et al. (2019) and Meckes et al. (2021) also suggested that physical activity can be used as a preventive intervention, especially with high-risk groups, such as FRs.

Another resilience strategy believed to mitigate negative symptoms is mindfulness-based resilience training (MBRT; Antony et al., 2020). As FRs use some exercises, such as body awareness scans, martial arts, mindful body movements, and meditation, there has been evidence to suggest that there is an increase in resilience, mindfulness, mental well-being, emotional intelligence, and physical health. The same study suggested a decrease in fatigue, anger, burnout, poor emotional regulation, and overall stress; however; the results from this study were mixed, with some resilience factors and strategies being limited (Antony et al., 2020).

Along with the attempts to determine behaviors to avoid the onset of PTSD, another study suggested that incorporating a nutrient, such as curcumin (a compound found in the turmeric plant), can have anti-inflammatory properties, which may also serve as effective in treating psychiatric disorders and depressive disorders (Aubry et al., 2018). For FRs, the suggestion would be that this compound would reduce depressive behaviors and anxiety that follows experiences of chronic stress. Although it may sound simple, some research has examined if something as basic as showing compassion can help alleviate the effects of stress. Research conducted with healthcare professionals has concluded that self-compassion helped to buffer against self-criticism and increased self-acceptance; however, there were no indications that this intervention helped to improve areas of mental health (McDonald et al., 2020).

Research that has lended a great amount of information to the current hypothesis came from more recent findings. A more in-depth approach was taken by Stanley et al. (2019), with the suggestion that not only is it important that FRs receive social support from friends and family, but also that more emphasis is put on the social support from the organization, which includes coworkers and supervisors. The belief is that the internal support system is better acquainted with the uniqueness of the trauma experienced within the department. The results of

this study among firefighters suggested that feelings of belongingness and social support from within are associated with lower levels of PTSD symptoms; however, one of the limitations listed in this study noted that several of the participants in the study may have already qualified for a PTSD diagnosis (Stanley et al., 2019).

Summary

This chapter addressed the topic of FRs being a high-risk population for mental illnesses, due to the chronic and traumatic events that they face daily due to the unique role of their occupation. It introduced the three theoretical frameworks that served as the basis for this quantitative study and the literature that was related to the effect that depression, anxiety, substance use, PTSD, and suicidal ideation and attempts have on those who serve on the frontlines in the wake of disasters and traumatic events. Those who served for more than 10 years were almost twice as likely to exhibit psychological distress, as almost half were diagnosed with clinically significant clusters of mental disorders and were six times more likely to experience the symptoms of PTSD (Smith et al., 2021).

Most of the peer-reviewed research has been focused on the theory that FRs will inevitably suffer from one or more psychological disorders, due to the responsibilities in this type of work, the unique experiences this population works with, and the mental toll it takes on the individual, which is evident for months and even years after traumatic events take place (Motreff et al., 2020). Moreover, FRs are a unique population of workers, they have unique psychological symptom presentations, and the way they experience mental illnesses may be different from others who are diagnosed with the same disorders (Bryant, 2022), due to shift work hours, gender risk factors, and the physical and verbal danger they face.

Help-seeking stigma has been a significant concern among FRs, in that many feel that they will be negatively evaluated by peers and superiors, their job detail will be changed, and they will have to work inconsistent hours to allow access to mental health services (Haugen et al., 2017). Another stigma addressed was how the FR views their job requirements and considers traumatic exposure to be a necessary and normal part of the duty (Jones et al., 2019). This coincided with the concern addressed by untreated trauma responses and the lasting impression of depression, anxiety, and PTSD among the FR population (Kshtriya et al., 2022).

Treatment and early intervention with certain modalities, such as CBT, pharmacological methods, eclectic approaches, and EMDR (Papazoglou, 2017), have provided assessments and measurements in order to accurately address and promote mental health. Along with treatment and intervention approaches, resilience factors are believed to help alleviate psychological distress, symptomology, and duration; aid in mental health recovery; and aid in the reduction of stress-related disorders (Chmitorz et al., 2021). The hypothesis was that some FRs have resilience factors in place that have helped in preventing the onset of depression, anxiety, substance use, and PTSD. Determining which resilience factors, if any, are present in FRs who have served in their line of duty and have not developed symptomology had a significant impact on developing training systems for FRs and keeping this valuable population safe and healthy.

Chapter Three: Methods

Overview

The purpose of this study was to measure what resilience factors first responders (FRs) have in place that have been successful in promoting their mental health during the time served in their respective occupations. This correlational study sought to identify how FRs cope with repeated exposure to traumatic situations without developing the symptomology of anxiety, depression, substance use, or posttraumatic stress disorder (PTSD). Chapter Three describes the research design that was used in this study, along with a description of the participants, setting, procedures, and strategies used to collect and interpret the data.

Design

The purpose of this quantitative study was to use a quasi-experimental correlational and regression analysis to better understand the role that resilience plays for FRs who have served in their respective line of duty without symptoms of psychological distress. This study was quasi-experimental, due to the approach of asking the participants questions that identify them in their natural phenomenon, and the measurements were selected by the participants in a natural setting (Maciejewski, 2018). The quantitative nature of the study allowed for the phenomena to be described numerically and to determine the relationships between two or more variables (Stockemer, 2019).

For this quasi-experimental study with correlational and regression analysis, the dependent variables were depression, anxiety, substance use, and PTSD. The independent variable for this quantitative study was resilience. These variables were based on previous research, in which quantitative studies had been conducted to research the unique stressors and traumatic experiences in the FR population (Geronazzo-Alman et al., 2017; Hallinan et al., 2019;

Stanley et al., 2016). Research questions and assessments that measured the dependent variables were adapted for this study based on prior peer-reviewed research on the FR population (Bonumwezi et al., 2022; Haugen et al., 2017; Jones et al., 2018; Lewis-Schroeder et al., 2018; Morrison et al., 2021; Robertson, 2019; Yung et al., 2022).

Research Questions

RQ1: How do first responders score on resilience traits when compared to scores on the PCL-5?

RQ2: How do first responders score on resilience traits when compared to the BDI?

RQ3: How do first responders score on resilience traits when compared to the BAI?

RQ4: How do first responders score on resilience traits when compared to the ASI-SR?

RQ5: Which factors are better predictors of resilience?

RQ6: Does the absence of resilience factors increase the risk of distress?

Hypotheses

H_a1: A first responder who scores high on the resilience trait of having the ability to adapt to change will have a low score on psychological distress assessments.

H_a2: A first responder who scores high on the resilience trait of being able to deal with whatever comes along will have a low score on psychological distress assessments.

H_a3: A first responder who scores high on the resilience trait of having the ability to cope with stress will have a low score on psychological distress assessments.

H_a4: A first responder who scores high on the resilience trait of being able to stay focused and think clearly will have a low score on psychological distress assessments.

H_a5: A first responder who scores high on the resilience trait of not getting discouraged in the face of failure will have a low score on psychological distress assessments.

H_a6: A first responder who scores high on the resilience trait of being able to handle unpleasant feelings such as anger, pain, or sadness will have a low score on psychological distress assessments.

H_a7: Specific factors will be better predictors of resilience.

H_a8: The absence of resilience factors will increase the risk of first responder distress.

Participants and Setting

The target population for this study consisted of FRs employed in fire and police departments and a hospital emergency room setting located in the state of California. The participants were drawn from a criterion and convenience sample of FRs located in California. The FRs responded to emergencies and disasters in order to protect those in the community. Although the nature of the job and specific duties may differ, FRs are united in the demanding nature of their jobs and the regular exposure to physical and psychological stress (Arble & Arnetz, 2016).

The sample number required for the study was determined by collecting information from county websites, which provided the number of stations, departments, and individuals who work in that specific field. The number of required participants was based on the current findings that there were approximately 630 FRs who are categorized as firefighters, police officers, dispatchers, or emergency medical physicians (military and all other hospital workers were not calculated in this study) in a specific city located in California (*Contra Costa County, California*, 2022; U.S. News & World Report, 2023).

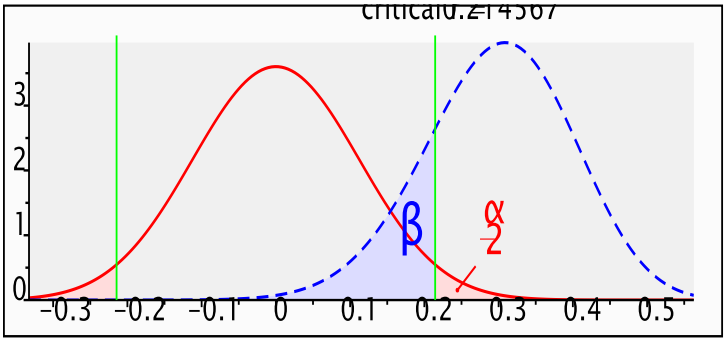
To ensure that there would be a large enough pool of candidates to draw from, conversations were held with the chiefs of police and fire departments, as well as with the Director of Employer Services from the local hospital. Having received positive feedback from

the department leaders, the researcher was encouraged to make communication with them when the survey was made available.

To determine the minimum sample size required in order to test the research questions, an a priori power analysis was conducted using the GPower version 3.1.9.7 (Faul et al., 2007). A two-tailed test was selected to detect negative or positive effects. The exact test was selected from the drop-down menu, since it is valid for any sample size, and the statistical test Correlation: Bivariate normal model was selected to identify the relationship between two variables. The power analysis selected was A Priori: Compute required sample size – given alpha, power, and effect size, since 80% power was desired. The results indicated that the required sample size needed to achieve 80% power for detecting a medium effect (0.3) at a significance criterion of alpha = .05, would be N = 84 for a correlational bivariate normal model. Thus, the sample size of N = 84 was adequate to test the research question, as shown in Figure 1.

Figure 1

Sample Size and Power Determination by Gpower 3.1.9.7



Instrumentation

Several assessments were used to identify whether the participants met the criteria for anxiety, depression, substance use, and/or PTSD. Participants were also prompted to complete the resilience (independent variable) scale provided.

Posttraumatic Stress Disorder Checklist

The Posttraumatic Stress Disorder Checklist (PCL) is a widely used self-report measurement for PTSD that was developed in 1990 by the National Center for PTSD. The PCL for the DSM-5 (PCL-5) measurement consists of 20 items that correspond to PTSD criteria experienced over the past month by using a 5-point Likert scale ranging from 0 = not at all, to 4 = extremely. It prompts the participant to identify the index trauma and then refer to that trauma as the stressful experience (Blevins et al., 2015). The PCL-5 has been used to identify or predict PTSD diagnosis within a given population, setting, and assessment goal. The assessment has shown to have excellent psychometric properties, such as test/re-test reliability that ranges from .66–.96, internal consistency with alpha ranging from .83–.98, convergent validity, discriminant validity, and diagnostic utility. The PCL has been a commonly used measurement within PTSD confirmatory factor analysis literature and research (Blevins et al., 2015), and it can be completed by the participant in 5–10 minutes (Weathers et al., 2013). According to Cheng et al. (2020), the PCL-5 was used in a study to evaluate PTSD among healthcare workers in China during the COVID-19 pandemic. This population worked with an increased number of cases, with a higher risk of infection, mental distress, and little, if any, knowledge about the virus. This resulted in an increased number of healthcare workers (i.e., frontline workers) experiencing psychological chaos, specifically PTSD. Previous research has suggested that 52% of Chinese healthcare workers who were on the frontline during the initial outbreak of COVID-19 were

more likely to have depression symptoms, and 57% of those workers were more likely to have symptoms of anxiety (Cheng et al.). Taking the prevalence of PTSD among this population, a reliable assessment tool was needed to evaluate the symptom severity. Thus, the PCL-5, a 20-item Chinese version, was used and showed that 59% of the participants reported PTSD symptoms and met the criteria for a provisional diagnosis; however, there was not a discriminate assessment for generalized anxiety disorder (GAD; Cheng et al., 2020).

Beck Depression Inventory

The Beck Depression Inventory (BDI) was developed by Beck and colleagues in 1961 with a revision in 1996. It is a 21-item inventory that can be used as a self-report to measure symptoms of depression. Internal consistency of the BDI ranges between .73–.92 with a mean of .86 (Steer et al., 2000). The 1996 revision, the BDI-II, is the most recent version and measures the severity of depression over the past 2 weeks as symptoms are rated on a 4-point scale (0–3), which gives a total score from 0 to 63 (Button et al., 2015). In Button et al.'s research, the Cronbach coefficient alpha was shown to be 0.91 in 140 outpatients who were diagnosed with a variety of psychiatric disorders as categorized in the DSM. When both versions of the BDI were administered, the Pearson product correlations for both assessments resulted in a hundredth of a point of one another for the same variables. However, the BDI-II resulted in a total score that was around two points higher than for the original version; also, there was an additional symptom that was endorsed on BDI-II (Button et al., 2015).

A meta-analysis conducted by Erford et al. (2016) identified the internal consistency of the BDI-II of .89 and the test-retest reliability of .75. The authors also identified that convergent comparisons among 144 studies were robust among over 40 depression instruments.

Additionally, the structural validity of the BDI-II supported one and two-factor solutions, according to criterion cutoff (Erford et al., 2016).

Beck Anxiety Inventory

The Beck Anxiety Inventory (BAI) was developed in 1987 (revised in 1993) by Beck and colleagues (Osman et al., 1997). It is a 21-item self-measurement using a 0–3 Likert scale (0 = not at all to 3 = severely, it bothered me a lot), with scores ranging from 0 to 63; it has shown to be strong in internal consistency and test-retest reliability. The BAI allows the participant to rate the frequency that they have experienced symptoms of anxiety (without screening for depression symptoms) within the past month (Feldman et al., 2021). The BAI is one of the most widely used screening instruments that measures anxiety, best used with participants 17 years and older. It has been reported that the BAI is the ninth most commonly used screening tool (Bardhoshi et al., 2016). Bardhoshi et al. (2016) conducted a meta-analysis, in which they reviewed over 190 scholarly works that referenced using the BAI. Internal consistency reported was .91, and test-retest reliability was .65. In examining the inventory structure and psychometric properties of the BAI, Chapa (2021) used a sample of U.S. employees from a variety of industries through the online data collection method of SurveyMonkey and analysis using SPSS 25 software. Cronbach's alpha for all 21 items was .93 (showing acceptable criteria) for internal consistency reliability, and bivariate correlations for all items, including cognitive and somatic scales, showed a positive association with other anxiety analyses (Chapa, 2021).

Addiction Severity Index

The Addiction Severity Index – Self Report (ASI-SR) is designed as the self-report measurement from the original Addiction Severity Index (ASI) interview version. The self-administered ASI is considered a reliable measurement in all domains except the family/social

domain (Ljungvall et al., 2019). The ASI was developed by McLellan and collaborators at the University of Pennsylvania's Center for the Studies of Addiction (de Vries et al., 2015). It was introduced in the United States in 1980 as a comprehensive assessment to identify the impairments that co-occur in substance use disorders (de Vries et al., 2015). A modified version was developed in 1992 and is believed to be one of the most widely used instruments to assess substance use disorders in a variety of settings; it has been translated into multiple languages and used among many different populations (Denis et al., 2013). Cronbach's alpha for the ASI varied from 0.92–0.64, with the highest score represented by the alcohol and medical domains, and the social and family domains having the lowest scores. Previous research has identified the ASI to be supportive of construct validity and highly correlated with measures of depression and psychological distress (Ljungvall et al., 2019).

A study conducted between the clinician and self-reporting versions evaluated the intraclass correlation analysis (ICC) using the Wilcoxon signed rank test (Ljungvall et al., 2019). The reliability and internal consistency were evaluated by using Cronbach's alpha and resulted in six of the seven domains measuring good to excellent. Internal consistency was evaluated as acceptable when measuring six of the seven composite score domains on the ASI interview and fove of the seven composite score domains on the ASI-SR (Ljungvall et al., 2019). The interrater reliability identified high reliability in using the ASI for severity rating; there was, however, a lower reliability coefficient in problem areas, such as the effect that addiction has had in specific domains (Spence et al., 2023).

A study was conducted to compare the shorter, self-administered ASI-SR against the clinician-administered (ASI-CA) version. The self-administered version of the ASI was believed to allow for more anonymity and privacy, in which participants can discuss their issues. A study

conducted in a Nigerian residential treatment facility by Yerima et al. (2020), using the ASI-SR, found a slight but not significant endorsement of family issues with the ASI-CA compared to the ASI-SR. In this study, correlations of the composite scores were used against the seven domains of the assessment using a paired student's two-tailed *t*-test with the confidence interval set at 95%. The correlations ranged from 0.52 to 0.97 (employment having the largest correlation and family/social having the lowest), showing a positive correlation between the two different formats of the ASI. A significantly higher mean composite score for the ASI-SR was evidenced across all of the domains, excluding the family/social domain, in which the ASI-CA had a higher but insignificant composite score (Yerima et al., 2020).

The ASI multi-media version (ASI-MV) does not require training, and it eliminates interviewer variability and subjective ratings. Original research conducted by McLellan's team on the ASI suggested that interrater reliability ranged from .84 to .95 using Spearman-Brown coefficients; however, it has been difficult to replicate those same high numbers of reliability (Yerima et al., 2020).

Connor-Davidson Resilience Scale

The Connor-Davidson Resilience Scale (CD-RISC) is a 25 or 10-item measurement that identifies the participant's ability to cope with adverse situations. Participants respond using a Likert scale in order to rate items from 0 = not true at all to 4 = true nearly all of the time. The CD-RISC psychometric properties for use in the general population support its internal consistency, test-retest reliability, and divergent and convergent validity (Campbell-Sills & Stein, 2007). The scale was developed to measure resilience in adults and examine hardiness, protective factors, and traits that are associated with adaptive stress responses. Items are generated to consider self-efficacy, sense of humor, secure attachment, ability to adapt to

changes, commitment, control, looking at change as a challenge, ability to handle stress and pain, patience, optimism, and faith. The measurement is internally consistent (Cronbach's alpha = .89), and score totals range from 0 to 100, with a higher score representing a higher level of resilience (Green et al., 2014).

The CD-RISC was used by Green et al. (2014) with volunteers enrolled in the Department of Veterans Affairs and who were post-9/11 U.S. military veterans. The CD-RISC was broken into two sub-samples so that the stability of the factorial structure could be assessed across both samples. Green et al. identified that a two-factor solution that was composed of the eight items of adaptability and the six self-efficacy items was a best-fit model. This two-factor solution showed internal consistency and good concurrent validity among both of the tested samples. Only the adaptability-themed scale was found to be consistent with the proposed resiliency theory, and results suggested that resilience is unidimensional within the post-9/11 U.S. military participants (Green et al., 2014).

Procedures

Due to the quasi-experimental nature of the study, participants were directed to answer questions on SurveyMonkey with the only exclusionary factors being non-FRs or FRs who are not currently serving in the state of California. The participants were provided with informed consent (see Appendix A), directions, and details about the nature and purpose of the study, along with the questions via SurveyMonkey. SurveyMonkey is an internet program that allows for developing surveys to use, targeting a specific or desired population (Waclawski, 2012), and it allows participants to answer the survey questions anonymously and in a private setting of their choice. SurveyMonkey allows for the collection of data with real-time results and provides custom reporting, filters, and cross-tabulating options (SurveyMonkey, 2023). Using

SurveyMonkey helped ensure the integrity and privacy of each individual involved in the research process. The purpose of the quasi-experimental study was to consider real-world and non-randomized situations and to allow for an increase in external validity (Bell, 2022).

The current study used participants that consisted of FRs in the state of California. After permission was obtained by command staff at local fire departments, the police department, and the hospital, a survey flyer with instructions (see Appendix B), the survey link, and a QR code was provided to those in leadership and command positions for each department, respectively. Emails with the flyer were sent to those who requested the flyer to be sent via email. An anonymous survey was provided via SurveyMonkey (see Appendix C), and the researcher was unable to identify participants or the FR departments that they were associated with.

All participants were over 18 years of age and served as FRs. When logging in to the survey, the participants read the consent form and selected either “yes” or “no” to move forward or to opt out of finishing the survey. The participants were able to complete part or all of the survey or finish at a later time. The survey could be filled out in a private location and on a private or personal electronic device used at the participant's discretion. Participants were unable to access information regarding others who took place in the study. The researcher was the only individual who had access to the survey development, password, data, and computer used to collect the survey results. All information from the surveys was maintained under a password-locked computer, where it will be maintained for a minimum of 3 years and then destroyed.

The survey consent form, approved by the institutional review board (IRB; see Appendix D), was included at the beginning of the survey login. The consent provided the invitation, purpose of the study, participation details, benefits and risks, record storage, compensation, and

steps to withdraw from the study. The IRB contact information was also provided to anyone who wished to communicate with someone outside of the researcher.

Data Analysis

Once the data collection was completed, the PCL-5, BDI, BAI, ASI-SR, and CD-RISC-10 scores were calculated. Each variable measured with the respective assessment was measured independently against the resilience measurement score, and totals were entered into SPSS version 29.0. A simple correlation examined the relationship between depression and resilience factors, anxiety and resilience factors, substance use and resilience factors, and PTSD and resilience factors and identified a correlation coefficient ranging from +1.00 (strong positive relationship) to -1.00 (strong negative relationship; Heppner et al., 2015). Regression analysis was used to examine the relationship between the criterion variables and the predictor variable of resilience. To help the study be more robust, exploratory factor analysis (EFA) was also used on the resilience factors to determine which resilience factor(s) may help to reduce the risk of distress among FRs. Exploratory factor analysis can be used to identify the latent factors that describe the covariation within a set of variables and the degree to which those variables are related to the factors (Kahn, 2006). It is a good way to understand which constructs explain a set of variables; therefore, it was used to consider how FR race, gender, and years of service contribute to psychological distress. A scatterplot was used to indicate the strength and direction of the relationship, and charts identified the number of responses in the specific assessment's category (Cozby & Bates, 2012).

Chapter Four: Findings

Overview

The purpose of this quantitative, correlational study was to examine the relationship between first responders (FRs) and the resilience factors that help to promote their mental health. In this quasi-experimental study with correlational and regression analysis, the dependent variables were depression, anxiety, substance use, and posttraumatic stress disorder (PTSD). The independent variable for this quantitative study was resilience. This study hypothesized that resilience factors that FRs use would result in a lower level or total absence of mental health disorders and dysfunctions. This chapter reviews the descriptions of the participants, the type of data that was collected and analyzed, findings that emerged from the data, and how the findings were related to the research questions.

Descriptive Statistics

A total of 118 FRs agreed to the survey consent form and opened the survey. Of the 118 respondents, 29 of the surveys could not be used due to being incomplete. Thus, in total, 89 surveys were fully completed and submitted through SurveyMonkey's portal. As data was being collected and entered into SPSS, it was identified that the Connor-Davidson Resilience Scale-10 (CD-RISC-10) had not been copied into the file of the survey that was entered into SurveyMonkey, thus making the first version of the survey conducted invalid.

The survey was corrected and uploaded to SurveyMonkey and labeled as a revised version of the California First Responder Survey (see Appendix C). In total, 97 participants completed the revised survey in its entirety, and those results were determined to be valid for this study. No surveys were found to be incomplete in the revised edition of the First Responder Survey. The survey consisted of demographic questions, 15 questions from the PTSD Checklist

for the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (PCL-5), 21 questions each from the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI), 11 questions from the Addiction Severity Index – Self Report (ASI-SR) that were determined based on the ability to score the answers, and 10 questions from the CD-RISC.

When setting up the demographics, independent variables, univariate analyses, and bivariate analyses, it required that the individual respondents were assigned a respondent ID number, since the respondent ID issued in SPSS was very long and made it difficult to identify outliers. A single race/ethnicity variable was created, and any participant who selected more than one race/ethnicity was assigned multiple/mixed race. All other groups other than White were small enough that they were collapsed into one group. One participant selected their gender as other; to prevent them from being excluded from the analyses or creating an outlier in the data set, a variable was created as female/other. The years of service categories remained the same.

Results showed that 66% of the participants reported being White, while 34% of the participants stated that they were American Indian/Alaskan Native, Asian/Pacific Islander, Black or African American, Hispanic, or Multiple ethnicity/Other (see Table 1). Results showed that 17.5 % of the participants responded that they were female or other gender, while 82.5% of the participants were male (see Table 2). Years of service were broken into four categories: 0–5, 6–10, 11–15, or 16 or more years. Of the participants, 15.5% stated that they had been a FR for 0–5 years, 17.5% have served for 6–10 years, 15.5% have served for 11–15 years, and over half of the participants (51.5%) have served as a FR for 16 years or more (see Table 3).

Table 1

Participant Race/Ethnicity Categorized

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	64	66.0	66.0	66.0
	Any race/ethnicity minority	33	34.0	34.0	100.0
	Total	97	100.0	100.0	

Table 2

Participant Gender Categorized

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female/Other	17	17.5	17.5	17.5
	Male	80	82.5	82.5	100.0
	Total	97	100.0	100.0	

Table 3

Participant Years Served

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0–5 years	15	15.5	15.5	15.5
	6–10 years	17	17.5	17.5	33.0
	11–5 years	15	15.5	15.5	48.5
	16 or more years	50	51.5	51.5	100.0
	Total	97	100.0	100.0	100.0

Results

Hypotheses

H_a1: A first responder who scores high on the resilience trait of having the ability to adapt to change will have a low score on psychological distress assessments.

H_a2: A first responder who scores high on the resilience trait of being able to deal with whatever comes along will have a low score on psychological distress assessments.

H_a3: A first responder who scores high on the resilience trait of having the ability to cope with stress will have a low score on psychological distress assessments.

H_a4: A first responder who scores high on the resilience trait of being able to stay focused and think clearly will have a low score on psychological distress assessments.

H_a5: A first responder who scores high on the resilience trait of not getting discouraged in the face of failure will have a low score on psychological distress assessments.

H_a6: A first responder who scores high on the resilience trait of being able to handle unpleasant feelings such as anger, pain, or sadness will have a low score on psychological distress assessments.

H_a7: Specific factors will be better predictors of resilience.

H_a8: The absence of resilience factors will increase the risk of first responder distress.

Exploratory Factor Analysis

The resilience scale, CD-RISC-10, used in this study was not scored with yes/no answers, but rather it was scored using a 0–4 scale (0 = not true at all, 1 = rarely true, 2 = sometimes true, 3 = often true, 4 = true nearly all of the time); therefore, it was not advantageous to run an Exploratory Factor Analysis (EFA) on each question independently of the others. The 10 items on this scale were numbered in SurveyMonkey as the following:

Q74: I am able to adapt to change.

Q75: I can deal with whatever comes along.

Q76: I try to see the humorous side of problems.

Q77: I understand that coping with stress can strengthen me.

Q78: I tend to bounce back after illness or hardships.

Q79: I am able to achieve goals despite there being obstacles.

Q80: I can stay focused under pressure.

Q81: I am not easily discouraged by failure.

Q82: I think of myself as a strong person.

Q83: I can handle unpleasant feelings such as anger, pain, and sadness.

The use of EFAs on the CD-RISC-10 was to create a scale to determine if there were any subscales within the resilience measurement and to also determine if there were patterns of resilience factors that help to reduce the risk of psychological distress.

An EFA was used with principle axis factoring and direct oblimin rotation (an oblique rotation for correlated factors); however, the Eigenvalue rule would give 1 factor. The EFA met KMO and Barlett criteria and noted a lower communality for Q76, "I try to see the humorous side of problems," with a very low loading of .215, along with a low loading of Q81, "I am not easily discouraged by failure" of .552. A low loading of Q76 and Q81 identified significantly lower scores than the rest of the resilience assessment questions. An EFA also identified a cross-loading of Q77, "I understand that coping with stress can strengthen me," which showed a lower score along with the other constructs on the resilience assessment. The interpretation of the data showed that all other questions on the resilience scale had close and consistent scores, except for Q76 and Q81. This was significant because it may be due to the use of humor (Q76) not being encouraged, acceptable, or trained within the FR occupation, and failure (Q81) having a much more detrimental meaning when failure is represented by loss of life, trauma exposure, and/or destruction.

On the whole, the 10 resilience questions from the CD-RISC-10 were examined and compared to determine how the CD-RISC-10 was as a general screening tool, as they are represented in the SPSS Communalities output. Table 4 shows the squared multiple correlation

of the first question of the resilience assessment as the initial value with regressed Q2–Q10. The squared multiple correlation for Q1 was .633. The extraction value (from the retained factors) showed .587, which showed that there were no major value differences between any of the questions on the resilience scale. Again, with using all 10 resilience questions from the CD-RISC-10, the scree plot indicated a single factor from the eigenvalue, with no real elbow (see Figure 2). This showed that there was a very small amount of total variance beginning around the third factor.

Table 4

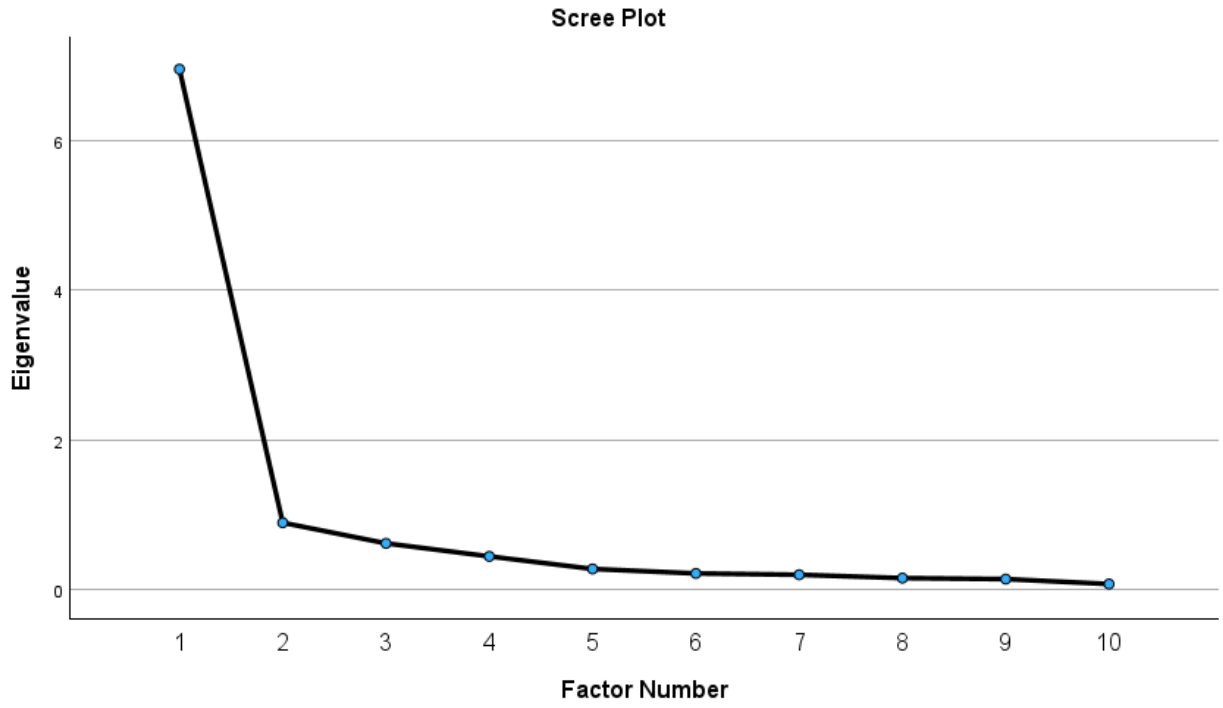
SPSS EFA with all 10 Resilience Questions

	Initial	Extraction
Resilience: I am able to adapt to change.	.633	.587
Resilience: I can deal with whatever comes along.	.783	.756
Resilience: I try to see the humorous side of problems.	.299	.215
Resilience: I understand that coping with stress can strengthen me.	.754	.761
Resilience: I tend to bounce back after illness or hardships.	.849	.864
Resilience: I am able to achieve goals despite there being obstacles.	.874	.862
Resilience: I can stay focused under pressure.	.825	.872
Resilience: I am not easily discouraged by failure.	.559	.552
Resilience: I think of myself as a strong person.	.754	.774
Resilience: I can handle unpleasant feelings such as anger, pain, and sadness.	.796	.806

Note. Extraction Method: Principal Axis Factoring.

Figure 2

SPSS Scree Plot with all CD-RISC-10 Questions



To determine if a question from the CD-RISC-10 needed to be dropped because it was not compatible or consistent with the other questions, the only cross-loading question that was identified was Q77, “I understand that coping with stress can strengthen me.” When Q77 was removed, as seen in Table 5, Q76, “I try to see the humorous side of problems” now showed a very low loading of .142, which suggested that this variable was not correlating with the other variables.

Table 5

SPSS EFA Used to Drop Cross-Loading Q77

	Initial	Extraction
Resilience: I am able to adapt to change.	.632	.716
Resilience: I can deal with whatever comes along.	.774	.836
Resilience: I try to see the humorous side of problems.	.220	.142
Resilience: I tend to bounce back after illness or hardships.	.843	.857
Resilience: I am able to achieve goals despite there being obstacles.	.866	.867
Resilience: I can stay focused under pressure.	.822	.819
Resilience: I am not easily discouraged by failure.	.557	.562
Resilience: I think of myself as a strong person.	.753	.766
Resilience: I can handle unpleasant feelings such as anger, pain, and sadness.	.796	.808

Note. Extraction Method: Principal Axis Factoring.

To continue with the assumption testing, the somewhat low communality of Q76, "I try to see the humorous side of problems," was dropped. There was a different factor solution with just two items separating. Both of these questions were based on the idea of adaptability: Q74, "I am able to adapt to change," and Q75, "I can deal with whatever comes along." This indicated that resilience questions that were based on adaptability may be important to consider with the FR population, in that, as Joyce et al. (2019) suggested in their study, FRs may be able to increase in adaptability over a period of time, and this was an important element of resilience.

Meeting assumptions did not change when removing any of the cross or low-loading questions on the CD-RISC-10. Table 6 shows the initial and extraction values when dropping the low-scored Q76, "I try to see the humorous side of problems." In this table, all of the variables were consistent with one another.

Table 6

SPSS EFA Used to Drop Low Communality Q76

	Initial	Extraction
Resilience: I am able to adapt to change.	.633	.619
Resilience: I can deal with whatever comes along.	.783	.960
Resilience: I understand that coping with stress can strengthen me.	.726	.708
Resilience: I tend to bounce back after illness or hardships.	.848	.863
Resilience: I am able to achieve goals despite there being obstacles.	.874	.885
Resilience: I can stay focused under pressure.	.809	.816
Resilience: I am not easily discouraged by failure.	.559	.552
Resilience: I think of myself as a strong person.	.752	.750
Resilience: I can handle unpleasant feelings such as anger, pain, and sadness.	.793	.803

Note. Extraction Method: Principal Axis Factoring.

When looking at the total variance explained for the CD-RISC-10, the first two factors gave high eigenvalues, which totaled over 80% of the variability within the original variables. The variance of the two factors extracted was over 77%, which was close to the initial solution. The approximate 3% difference between the factors showed that there was very little variance explained by the remaining factors (see Table 7).

Table 7

SPSS Total Variance Explained From Removing Q76

Factor	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a] Total
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	6.783	75.370	75.370	6.572	73.017	73.017	6.433
2	.628	6.976	82.346	.385	4.276	77.293	5.347
3	.457	5.077	87.424				
4	.308	3.417	90.840				
5	.219	2.431	93.271				
6	.203	2.255	95.526				
7	.176	1.957	97.483				
8	.148	1.645	99.128				
9	.079	.872	100.00				

Note. Extraction Method: Principal Axis Factoring.

[a]When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Reliability

When testing assumptions, the reliability and internal consistency of the assessment identified how each item in the questionnaire was related to the other. Cronbach's alpha was .948, which indicated a strong level of internal consistency. The reliability of the CD-RISC-10 was overall a valid scale to use with the FR population because any subscale in the CD-RISC-10 had high reliability, due to the very high reliability as a single scale (>.9).

Table 8, the Item-Total Statistics, shows the value of Cronbach's alpha if any one item was deleted from the CD-RISC-10 assessment. If Q76, "I try to see the humorous side of problems," was removed from the measurement, the Cronbach's alpha would improve slightly with the corrected item-total correlation value of Q76 at .384. This raised a question as to using

the CD-RISC-10 with FRs as a valid assessment when removing only Q76 from the measurement.

Table 8

SPSS Output for Item-Total Statistics of CD-RISC-10

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Resilience: I am able to adapt to change.	24.4894	83.113	.702	.946
Resilience: I can deal with whatever comes along.	24.3723	81.484	.822	.940
Resilience: I try to see the humorous side of problems.	24.3511	91.327	.384	.958
Resilience: I understand that coping with stress can strengthen me.	24.4574	80.810	.837	.940
Resilience: I tend to bounce back after illness or hardships.	24.2553	80.106	.905	.937
Resilience: I am able to achieve goals despite there being obstacles.	24.3617	80.599	.901	.937
Resilience: I can stay focused under pressure.	24.3085	81.097	.847	.939
Resilience: I am not easily discouraged by failure.	24.6809	82.757	.709	.946
Resilience: I think of myself as a strong person.	24.4362	79.216	.828	.940
Resilience: I can handle unpleasant feelings such as anger, pain, and sadness.	24.4362	79.840	.875	.938

Additional Analyses

Bivariate relationships were created between each demographic (e.g., gender, race, years of service) and each dependent variable and resilience. In cases where variables were skewed, a non-parametric test established the same conclusions, since non-parametric tests did not assume that the data followed a particular distribution. A non-parametric test, an independent samples t-test ran as the Mann-Whitney U Test, showed that there was no conceptual difference. As seen in Table 9, there were no significant differences in race.

Table 9

T-Test Groups Race and all Dependent Variables

	Race/Any Minority	N	Mean	Std. Deviation	Std. Error Mean
PTSD_sum	White	64	20.8438	14.95944	1.86993
	Any race/ethnicity minority	33	18.6364	13.10252	2.28086
Depression_sum	White	64	15.6406	13.60482	1.70060
	Any race/ethnicity minority	33	15.9091	16.24685	2.82821
Anxiety_sum	White	64	12.3438	12.89791	1.61224
	Any race/ethnicity minority	33	13.6970	12.63300	2.19912
Substance	White	63	.7576	.94051	.11849
Use_mean	Any race/ethnicity minority	33	.8347	1.12206	.19533
Resilience_mean	White	64	2.7519	.91642	.11455
	Any race/ethnicity minority	33	2.6424	1.13193	.19704

Again, when looking at the demographics and confirming the assumption, a non-parametric test was used to identify the same conclusion that the demographic race was not a factor when considering the participants' score on any of the dependent variable measurements. Table 10 shows the Mann-Whitney U Test used for the demographic race and PTSD, depression, anxiety, and substance use. In all dependent variable assessments, the participants who selected being White were higher in PTSD, depression, and substance use; however, the participants who selected being any race/ethnicity minority were slightly higher in the anxiety measurement, with a mean rank of 51.85 compared to 47.53 for White participants. As far as resilience, the White participants' mean score of 49.74 was higher than the any race/ethnicity minority mean rank of 47.56. The ranks output also identified that one White participant did not participate in the substance use questions (N = White 64, any race/ethnicity minority = 33, with a total of 97).

Table 10

Mann-Whitney Test Groups Race and all Dependent Variables

	Race/Any Minority	N	Mean Rank	Sum of Ranks
PTSD_sum	White	64	50.18	3211.50
	Any race/ethnicity minority	33	46.71	1541.50
	Total	97		
Depression_sum	White	64	49.82	3188.50
	Any race/ethnicity minority	33	47.41	1564.50
	Total	97		
Anxiety_sum	White	64	47.53	3042.00
	Any race/ethnicity minority	33	51.85	1711.00
	Total	97		
SubstanceUse_mean	White	63	48.98	3085.50
	Any race/ethnicity minority	33	47.59	1570.50
	Total	96		
Resilience_mean	White	64	49.74	3183.50
	Any race/ethnicity minority	33	47.56	1569.50
	Total	97		

As for the demographic, gender, there were no significant differences; however, the category female/other did score higher than males on anxiety (female/other SD = 18.29, male SD = 10.98). Due to the gender variables being unequal (female/other = 17, male = 80), an unequal variance t-test showed that the difference was not significant (see Table 11).

Table 11

T-Test Groups Gender and all Dependent Variables

	Gender	N	Mean	Std. Deviation	Std. Error Mean
PTSD_sum	Female/Other	17	20.9412	17.60849	4.27069
	Male	80	19.9125	13.65135	1.52627
Depression_sum	Female/Other	17	20.8235	20.34157	4.93356
	Male	80	14.6500	12.80536	1.43168
Anxiety_sum	Female/Other	17	18.7647	18.29457	4.43708
	Male	80	11.5375	10.98900	1.22861
SubstanceUse_mean	Female/Other	17	.8610	1.29769	.31474
	Male	79	.7675	.93503	.10520
Resilience_mean	Female/Other	17	2.5515	1.39878	.33926
	Male	80	2.7493	.88815	.09930

To confirm assumptions, a non-parametric test that did not assume that the demographic gender had equal variables would show the same conclusion that there was no difference. In Table 12, the mean rank among gender was consistent, with the only notable difference being that on the substance use total, there were only 79 male respondents and not 80 like the rest.

Table 12

Mann-Whitney Test Groups Gender and all Dependent Variables

	Gender	N	Mean Rank	Sum of Ranks
PTSD_sum	Female/Other	17	48.79	829.50
	Male	80	49.04	3923.50
	Total	97		
Depression_sum	Female/Other	17	53.76	914.00
	Male	80	47.99	3839.00
	Total	97		
Anxiety_sum	Female/Other	17	55.12	937.00
	Male	80	47.70	3816.00
	Total	97		
SubstanceUse_mean	Female/Other	17	43.38	737.50
	Male	79	49.60	3918.50
	Total	96		
Resilience_mean	Female/Other	17	49.71	845.00
	Male	80	48.85	3908.00
	Total	97		

In looking at the assumption that years of service has on psychological distress, general assumptions were different, in that it was a monotonic relationship. Since the variables were ordinal, no values were >.05. There was not a significant relationship between years of service and most mental health variables or resilience. Table 13 showed that with higher, positive resilience scores, the scores of depression (-.119), anxiety (-.149), and substance use (-.055) were lower. However, correlations in Table 13 also identified that more years of service were positively correlated with higher PTSD scores (.028).

Table 13

Correlations Between Years of Service and PTSD, Depression, Anxiety, Substance Use, and Resilience

			PTSD_ sum	Depression_ sum	Anxiety_ sum	SubstanceUse_mean	Resilience_mean
Spearman's rho	How many years have you served as a first responder?	Correlation Coefficient	.028	-.119	-.149	-.055	.176
		Sig. (2-tailed)	.788	.244	.146	.594	.085
		N	97	97	97	96	97

Assumptions were checked with the demographics race, gender, and years of service using the Mann-Whitney Test to compare two groups on ordinal dependent variables and to confirm that there were no outliers. Table 14 showed that the participants who selected the White race were more likely to have longer years of service, with a mean rank of 52.80, and Table 15 identified that there were no significant gender differences in years of service with a females/other mean rank of 45.88, and a male mean rank of 49.66.

Table 14

Mann-Whitney Test Comparing Race and Years Served

	Race/Any Minority	N	Mean Rank	Sum of Ranks
How many years have you served as a first responder?	White	64	52.80	3379.00
	Any race/ethnicity minority	33	41.64	1374.00
	Total	97		

Table 15

Mann-Whitney Test Comparing Gender and Years Served

	Gender	N	Mean Rank	Sum of Ranks
How many years have you served as a first responder?	Female/Other	17	45.88	780.00
	Male	80	49.66	3973.00
	Total	97		

Research Questions

RQ1: How do first responders score on resilience traits when compared to the PCL-5 (the PTSD assessment)?

For this question, the assumption of homoscedasticity was not met. Table 16 shows that there was, however, some heteroscedasticity with a marginal effect (r ^2 .396) in years served, showing the more years served, the higher the PTSD score. Overall results showed that greater years of service predict significantly higher PTSD, and resilience significantly predicts lower PTSD.

Table 17 shows a multiple linear regression analysis used to determine if there was a significant difference between the demographics of gender, race, and years of service, along with the resilience factors. These were grouped and compared to the scores on the PTSD assessment (PCL-5). The significance value was <.001, which was below 0.05 (F= 15.11, p = .001). Using this information in the coefficients table (see Table 18), the significance value for the demographic race was .380, gender was .903, and years of service was .037 when measured with the PCL-5. This suggested that the scores were higher on the PTSD assessment for the higher number of years served.

Table 16

Regression Analysis with DV PTSD and Predictors Resilience, Race, Gender, Years Served

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.630[a]	.396	.370	11.36772	.396	15.108	4	92	<.001

Note. Dependent Variable: PTSD_sum.

[a]Predictors: (Constant), Resilience_mean, Race/Any Minority, Gender, How many years have you served as a first responder?

Table 17

Regression Analysis Using PTSD as DV with Predictors Resilience, Race, Gender, Years Served

Note. Dependent Variable: PTSD_sum.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7809.469	4	1952.367	15.108	<.001[a]
	Residual	11888.696	92	129.225		
	Total	19698.165	96			

[a]Predictors: (Constant), Resilience_mean, Race/Any Minority, Gender, How many years have you served as a first responder?

Table 18

Coefficients of PTSD as DV and Predictors Resilience, Race, Gender, Years Served

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	38.964	4.897		7.957	<.001	29.239	48.690		
	Race/Any Minority	-2.190	2.482	-.073	-.882	.380	-7.119	2.739	.964	1.038
	Gender	.372	3.048	.010	.122	.903	-5.681	6.425	.992	1.008
	How many years have you served as a first responder?	2.240	1.056	.180	2.121	.037	.143	4.337	.913	1.095
	Resilience_mean	-9.291	1.206	-.642	-7.701	<.001	-11.688	-6.895	.943	1.061

Note. Dependent Variable: PTSD_sum.

RQ2: How do first responders score on resilience traits when compared to the BDI (the depression assessment)?

Using the same steps that were used to measure the demographics and PTSD, depression was now categorized as the dependent variable, along with the demographics of race, gender, years of service, and the resilience mean. In Table 19, the assumption of homoscedasticity was

not met, with only a little heteroscedasticity with r ^2 .620. In this interpretation, resilience was the only predictor of lower levels of depression.

Table 19

Regression Analysis of Depression as DV with Predictors Resilience, Race, Gender, Years Served

				Std. Error	Change Statistics				
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.787[a]	.620	.604	9.11280	.620	37.538	4	92	<.001

Note. Dependent Variable: Depression_sum.

[a]Predictors: (Constant), Resilience_mean, Race/Any Minority, Gender, How many years have you served as a first responder?

Looking at Table 20, the demographics of gender, race, years of service, along with resilience, were grouped and compared to the depression scale (BDI); again, the significance value of <.001 was below the 0.05 cutoff (F = 37.54, p = .001). This suggested that resilience, as the predictor, had a linear relationship to lower levels of depression. The coefficients table (Table 21) shows the significance value of race (.733), gender (.101), years served (.376), and the resilience significance value (<.001). This showed that resilience was a predictor of lower scores on the depression assessment.

Table 20

Regression Analysis Using Depression as DV with Predictors Resilience, Race, Gender, Years Served

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12469.057	4	3117.264	37.538	<.001[a]
	Residual	7639.974	92	83.043		
	Total	20109.031	96			

Note. Dependent Variable: Depression_sum.

[a]Predictors: (Constant), Resilience_mean, Race/Any Minority, Gender, How many years have you served as a first responder?

Table 21

Coefficients of Depression as DV and Predictors Resilience, Race, Gender, Years Served
Note. Dependent Variable: Depression_sum.

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Toler-ance	VIF
1	(Constant)	48.147	3.926		12.265	<.001	40.351	55.944		
	Race/Any Minority	-.680	1.990	-.022	-.342	.733	-4.632	3.271	.964	1.038
	Gender	-4.051	2.443	-.107	-1.658	.101	-8.904	.801	.992	1.008
	How many years have you served as a first responder?	.752	.847	.060	.889	.376	-.929	2.434	.913	1.095
	Resilience_mean	-11.465	.967	-.785	-11.854	<.001	-13.386	-9.544	.943	1.061

RQ3: How do first responders score on resilience traits when compared to the BAI (anxiety assessment)?

Following the pattern of the PCL-5 and BDI, the BAI was scored as the dependent variable, along with the demographics of race, gender, years of service, and the resilience mean. In Table 22, the assumption of homoscedasticity was not met, with *r*^2 .607. Table 23 shows the overall results that lower resilience significantly predicted higher anxiety ($F = 35.78$, $p = .001$).

Table 22

Regression Analysis of Anxiety as DV and Predictors Resilience, Race, Gender, Years Served

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.779[a]	.607	.590	8.16686	.607	35.575	4	92	<.001

Note. Dependent Variable: Anxiety_sum.

[a]Predictors: (Constant), Resilience_mean, Race/Any Minority, gender, How many years have you served as a first responder?

Table 23

Regression Analysis Using Anxiety as DV with Predictors Resilience, Race, Gender, Years Served

Model		Sum of Squares	*df*	Mean Square	F	Sig.
1	Regression	9491.092	4	2372.773	35.575	<.001[a]
	Residual	6136.186	92	66.698		
	Total	15627.278	96			

Note. Dependent Variable: Anxiety_sum.

[a]Predictors: (Constant), Resilience_mean, Race/Any Minority, gender, How many years have you served as a first responder?

The coefficients table (see Table 24) shows the significance value of race (.812), gender (.016), years served (.578), and the resilience significance value (<.001). There was a gender difference showing that females were higher in anxiety, and males were lower; however, the gender effect was dependent on the outlier, which was the participant who selected “other” in gender. When the outlier was excluded, there was no gender difference.

Table 24

Coefficients of Anxiety as DV and Predictors Resilience, Race, Gender, Years Served

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Toler-ance	VIF
1	(Constant)	42.300	3.518		12.024	<.001	35.313	49.288		
	Race/Any Minority	.426	1.783	.016	.239	.812	-3.115	3.967	.964	1.038
	Gender	-5.366	2.190	-.161	-2.451	.016	-9.714	-1.017	.992	1.008
	How many years have you served as a first responder?	.423	.759	.038	.558	.578	-1.084	1.930	.913	1.095
	Resilience_mean	-9.761	.867	-.758	-11.262	<.001	-11.483	-8.040	.943	1.061

Note. Dependent Variable: Anxiety_sum.

RQ4: How do first responders score on resilience traits when compared to the ASI-SR (substance use assessment)?

The assumption was checked with substance use as the dependent variable, along with the demographics of race, gender, years of service, and the resilience mean. Table 25 shows r^2 .373. Table 26's results show a non-linear relationship with some heteroscedasticity, not meeting the assumption of homoscedasticity ($F = 13.55$, $p = .001$).

Table 25

Regression Analysis of Substance Use as DV and Predictors Resilience, Race, Gender, Years Served

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.611[a]	.373	.346	.80994	.373	13.554	4	91	<.001

Note. Dependent Variable: SubstanceUse_mean.

[a]Predictors: (Constant), Resilience_mean, Race/Any Minority, Gender, How many years have you served as a first responder?

Table 26

Regression Analysis Using Substance Use as DV with Predictors Resilience, Race, Gender, Years Served

Model		Sum of Squares	*df*	Mean Square	F	Sig.
1	Regression	35.564	4	8.891	13.554	<.001[a]
	Residual	59.696	91	.656		
	Total	95.260	95			

Note. Dependent Variable: SubstanceUse_mean.

[a]Predictors: (Constant), Resilience_mean, Race/Any Minority, Gender, How many years have you served as a first responder?

Table 27, coefficients, shows the significance value of race (.793), gender (.947), years served (.349), and the resilience significance value (<.001). The regression did not meet the assumption; however, the relationship with resilience was consistent and quite strong.

Table 27

Coefficients of Substance Use as DV and Predictors Resilience, Race, Gender, Years Served

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Toler-ance	VIF
1	(Constant)	2.245	.349		6.423	<.001	1.550	2.939		
	Race/Any Minority	.047	.177	.022	.263	.793	-.305	.398	.966	1.036
	Gender	.014	.217	.006	.066	.947	-.417	.446	.993	1.007
	How many years have you served as a first responder?	.071	.075	.082	.941	.349	-.079	.221	.917	1.091
	Resilience_mean	-.629	.086	-.624	-7.307	<.001	-.800	-.458	.945	1.058

Note. Dependent Variable: SubstanceUse_mean.

Q5: Which factors are better predictors of resilience and RQ6: Does the absence of resilience factors increase the risk of distress?

To address both of these research questions, resilience was correlated with all of the mental health measurements (PCL-5, BDI, BAI, and ASI-SR), resulting in a negative correlation. Table 28 shows PTSD (-.596), depression (-.778), anxiety (-.762), and substance use (-.606). The higher the resilience, the lower the mental health assessment scores.

Table 28

Correlations Between Resilience and PTSD, Depression, Anxiety, and Substance Use

		PTSD_sum	Depression_sum	Anxiety_sum	SubstanceUse_mean
Resilience_mean	Pearson Correlation	-.596**	-.778**	-.762**	-.606*
	Sig. (2-tailed)	<.001	<.001	<.001	<.001
	N	97	97	97	96

*Correlation is significant at the 0.01 level (2-tailed).

Summary

Chapter Four presented the overview of the chapter, along with the data collected for the study, the descriptive results, additional analyses, and findings. In this study, resilience factors were measured with a total score on the CD-RISC. Depression, PTSD, anxiety, and substance use were measured as the dependent variables, and race, gender, and years served as a FR were the demographic variables measured with resilience and with each dependent variable. Bivariate analysis of resilience with each dependent variable and non-linear relationships were identified. Resilience was shown to be significantly negatively correlated to all the dependent variables; the higher resilience, the lower the PTSD (-.596), depression (-.778), anxiety (-.762), and substance use (-.606). As far as anxiety and substance use scores, findings showed that having low to medium levels of resilience can really reduce levels of anxiety and substance use; however, at some point, resilience as a buffer effect tends to level out and does not provide extra protection beyond the concept that being somewhat resilient is good, but being super resilient is not better. Results showed that resilience was significant in all dependent variables, but nothing else was found to be significant.

Chapter Five: Conclusions

Overview

This chapter provides a discussion of the study results presented in Chapter Four. The hypotheses are addressed in connection to the related literature and the theoretical framework that guided this study. This chapter also presents the implications of the study, as well as the limitations and recommendations for future research.

Discussion

The purpose of this quantitative correlational study was to understand how resilience factors can promote mental health in California first responders (FRs), how this can guide researchers, trainers, and mental health professionals in working with those who serve on the frontlines, and how the unique FR occupation affects mental health. This was important information since FRs are an at-risk population, with firefighters reporting higher rates of suicide attempts and ideation than the general population, and findings that 125–300 police officers will commit suicide in a given year (Substance Abuse and Mental Health Services Association [SAMHSA], 2018). Alarming statistics identified that this population responds to stressful, risky, high-paced calls that can be complicated by inter-department stressors, sleep deprivation, limited resources, and previous trauma experiences (Stanely et al., 2016).

In this study, 17.5% of the participants were identified as female/other, 82.5% male, 66% White, and 34% identified as other race/ethnicity minority. Resilience was defined as the ability to respond to adverse events effectively and to be able to thrive during extreme stress (O'Neil & Kruger, 2022). Resilience was measured in this study by the Connor-Davidson Resilience Scale-10 (CD-RISC-10) to identify any resilience traits that would help the FR tolerate change, personal problems, pressure, failure, and painful emotions. The CD-RISC-10 was scored using a

Likert scale with 0 = not true at all to 4 = true nearly all of the time and measures hardiness, protective factors, and traits that are helpful when in stressful situations (Green et al., 2014).

For this study, the dependent variables were posttraumatic stress disorder (PTSD), depression, anxiety, and substance use, with the independent variable being resilience. The measurements used in this study were the PTSD Checklist for the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (PCL-5), the Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI), the Addiction Severity Index – Self Report (ASI-SR), and the CD-RISC-10, respectively. Demographics used included race, gender, and years of service as a FR. In FRs whose years of service were higher, their PTSD scores were also higher with *r*^2 .396. Results showed that participants who identified as White were more likely to have longer years of service and that there were no gender differences when it came to years of service.

This study was built on the theoretical framework that FRs experience an unusual amount of stress and trauma on a daily basis, resulting in psychological distress and mental disorders (Brown et al., 2020), and that resilience factors can help to reduce it, thus, promoting mental health. This study, identifying resilience used by FRs, offered insight into how California FRs cope with their stressful occupations. In support of theories by Burnett (2017), Greinacher et al. (2019), and Joyce et al. (2019), the current study hypothesized that resilience factors and psychological distress are correlated. The assumption was that a FR's ability to demonstrate resilience would have a psychological benefit in reducing or mitigating PTSD, depression, anxiety, and substance use.

Relationships between the independent and dependent variables were identified, and resilience was significantly negatively correlated to PTSD, depression, anxiety, and substance use. For FRs who identified with resilience factors, they were found to be less likely to

experience high levels of psychological distress, with scores of PTSD (-.596), depression (-.778), anxiety (-.762), and substance use (-.606). The study further identified that for a FR to have low to medium levels of resilience, they could reduce their levels of anxiety and substance use. However, resilience tended to level out and did not provide an extra level of protection when the resilience levels scored extra high. This study found that resilience alone was significant with all dependent variables.

Implications

This study implied that utilizing resilience factors helps to mitigate and promote mental health, while a lack of resilience can exacerbate psychological distress and increase the potential for PTSD, depression, anxiety, and/or substance use and abuse. It was in collaboration with other theories of mental health that this study hypothesized that resilience factors are correlated with psychological factors that reduce mental disorders among FRs in California and possibly among FRs in other locations. Therefore, resilience enhances mental health in FRs. This leads to another implication of this study—if resilience helps to promote mental health in the FR population, then it would be advantageous to train FRs in a manner where resilience can be taught and promoted before, during, and after traumatic circumstances.

Limitations

The first limitation of this current study would be how fitting the CD-RISC-10 was as a resilience measurement for the FR population. Certain questions arose as to how the use of humor (Q76 of the survey in this study) may not be seen as acceptable or utilized as a coping mechanism for this specific population and how failure (Q81 of the survey) was seen as more detrimental and life/death than in other types of occupations. Therefore, it is imperative that a resilience scale is developed that is specific to FRs. Another limitation included the research

population being only that of California FRs and not a closer examination of FRs across the nation. An additional limitation would be the difficulty involved in collecting information and data from this specific population of individuals. Although the required number of participants (84) was exceeded by 13 (giving a total of 97 participants), it proved difficult to communicate that the survey provided via SurveyMonkey was an anonymous, HIPAA-compliant survey with no identifying information. Although there were a few limitations to the study, there was a major strength to the study, which was the quality of the data collected for this population. The concept of resilience was insightful for those who participated in the study and proved to be something that can be utilized to support FRs as they continue to serve in every community.

Recommendations for Future Research

A recommendation for future research includes understanding how a FR views peer support and peer relationships compared to that of supervisors and command staff. An anecdotal finding from this study includes the survey being completed when asked by a peer versus when they were asked by a supervisor to participate in the study. It may be that FRs view their peer as more of a brother or sister who provides support, backup, and protection both literally and figuratively. Therefore, the lack of support viewed from a supervisor, or the command staff, may impact resilience. An additional recommendation would be to identify a resilience scale that would appropriately measure the coping mechanisms of FRs as a unique population with unique resilience traits. Another recommendation would include the need to fully identify what services are considered FRs, since every state has a separate definition of what a FR is in the community. Throughout this study, questions arose as to what other types of occupations would be considered FRs and why those were not included in this study. Although this specific study was narrowed down to the state of California, previous journal articles identified varying roles and

descriptions of what other states would consider FRs. Additional recommendations for future research would be to investigate the role of strictly volunteer FRs as compared to those who receive a paycheck, benefits, and overtime for their work. Some differences in resilience and psychological disorders may be attributed to those who feel it is their duty to serve as a volunteer versus those who do it as a paid occupation.

Summary

Chapter Five presented the answers to the study's research questions and a discussion of the results. The bivariate analysis of the dependent variables with the independent variable were discussed, along with the finding that resilience factors are negatively correlated to all dependent variables. Furthermore, there was an assumption that the presence of resilience factors will reduce scores on the PCL-5, BDI, BAI, and ASI-SR. This chapter also presented the implications of this current research study, along with limitations and recommendations for future research.

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Appendix A

Participant Informed Consent

Consent

Title of the Project:

A CORRELATIONAL STUDY OF THE RESILIENCE FACTORS THAT PROMOTE MENTAL HEALTH IN FIRST RESPONDERS

Principal Investigator: Tamara Grayson, Doctoral Candidate, School of Behavioral Sciences, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be a first responder working in Northern California. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to identify resilience factors that have served to protect first responders from developing or being diagnosed with psychological disorders.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following:

1. Participate in an online questionnaire via SurveyMonkey that will take no more than 30 minutes.

Benefits to society include increased public knowledge on the resilience factors that promote mental health in first responders.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be anonymous.
- Data will be stored on a password-locked computer. After three years, all electronic records will be deleted.

Is study participation voluntary?

Participation in this study is voluntary. Your decision on whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Tamara Grayson. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [redacted] or [redacted] You may also contact the researcher's faculty sponsor, Dr. Stephen Ford, at [redacted]

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA, 24515; our phone number is 434-592-5530, and our email address is irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of this document for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.

Appendix B

Recruitment Flyer

A CORRELATIONAL STUDY OF THE RESILIENCE FACTORS THAT PROMOTE MENTAL HEALTH IN FIRST RESPONDERS

- Are you a first responder in California?

If you answered **yes** to the question listed above, you may be eligible to participate in a research study.

The purpose of this research study is to identify resilience factors that help to promote mental health in first responders.

Participants will be asked to fill out an online questionnaire via Survey Monkey.

If you would like to participate, please click here https://www.surveymonkey.com/r/TMDQ7L7 and complete the questionnaire.

A consent document is provided at the first page of the online questionnaire.

Tamara Grayson, a doctoral candidate in the School of Behavioral Sciences at Liberty University, is conducting this study.

Please contact Tamara Grayson at [redacted] or [redacted] for more information.

Appendix C

Survey in SurveyMonkey

REVISED survey for California First Responders

Consent:

A CORRELATIONAL STUDY OF THE RESILIENCE FACTORS THAT PROMOTE MENTAL HEALTH IN FIRST RESPONDERS

Principal investigator: Tamara Grayson, Doctoral candidate, School of Behavioral Sciences, Liberty University

Invitation to be part of a research study:
You are invited to participate in a research study. To participate, you must be a first responder working in California. Taking part in this research project is voluntary.
Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to identify resilience factors that have served to protect first responders from developing or being diagnosed with psychological disorders.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to participate in an online questionnaire via SurveyMonkey.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.
Participant responses will be anonymous.
Data will be stored on a password-locked computer. After three years, all electronic records will be deleted.

How will you be compensated for being part of the study?

Participants will not be compensated for participating in the study.

Is study participation voluntary?

Participation in this study is voluntary. Your decision on whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any questions or withdraw at any time prior to submitting the survey without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Whom to you contact if you have questions or concerns about the study?

The researcher conducting this study is Tamara Grayson. You may ask any questions you have now. If you have questions later, you are encouraged to contact her at [redacted]. You may also contact the researcher's faculty sponsor, Dr. Stephen Ford, at [redacted] or at [redacted]

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the IRB. Our physical address is Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA, 24515; our phone number is 434-592-5530, and our email address is irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by the student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Top of Form
Question Title
* 1. Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of this document for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.

I have read and understood the above information. I have asked questions and have received answers.

I consent to participate in the study.
Yes
No

Question Title
* 2. What is your gender?
Female
Male

Other (please specify)
Question Title
* 3. Which race/ethnicity best describes you? Please select only one answer.
American Indian or Alaskan Native
Asian/Pacific Islander
Black or African American
Hispanic
White/Caucasian
Multiple ethnicity/Other (please specify)

Question Title
4. Do you identify with any of the following religions? Please select all that apply.
Protestantism
Catholicism
Christianity
Judaism
Islam
Buddhism
Hinduism
Native American
Inter/Non-denominational
No religion
Other (please specify)

Question Title
* 5. How many years have you served as a first responder?
0-5 years
6-10 years
11-15 years
16 or more years

Question Title
6. When thinking about a past occupational experience, please answer the following question. Experiences repeated, disturbing memories, thoughts, or images of a stressful experience from the past.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
7. When thinking about a past occupational experience, please answer the following question. Experiencing repeated, disturbing dreams of a stressful experience from the past?
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
8. When thinking about a past occupational experience, please answer the following question. Suddenly acting or feeling as if a stressful experience were happening again (as if you were reliving it).
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
9. When thinking about a past occupational experience, please answer the following question. Feeling very upset when something reminded you of a stressful experience from the past.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
10. When thinking about a past occupational experience, please answer the following question. Having physical reactions (such as heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the past.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
11. When thinking about a past occupational experience, please answer the following question. Avoiding thinking about or talking about a stressful experience from the past or avoiding having feelings related to it.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
12. When thinking about a past occupational experience, please answer the following question. Avoiding activities or situations because they reminded you of a stressful experience from the past.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
13. When thinking about a past occupational experience, please answer the following question. Trouble remembering important parts of a stressful experience from the past.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
14. When thinking about a past occupational experience, please answer the following question. A loss of interest in activities that you used to enjoy.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
15. When thinking about a past occupational experience, please answer the following question. Feeling distant or cut off from other people.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
16. When thinking about a past occupational experience, please answer the following question. Feeling emotionally numb or being unable to have loving feelings for those close to you.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
17. When thinking about a past occupational experience, please answer the following question. Feeling as if your future will somehow be cut short.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
18. When thinking about a past occupational experience, please answer the following question. Trouble falling or staying asleep.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
19. When thinking about a past occupational experience, please answer the following question. Feeling irritable or having angry outbursts.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
20. When thinking about a past occupational experience, please answer the following question. Having difficulty concentrating.
Not at all
A little bit
Moderately
Quite a bit
Extremely

Question Title
21. Please select one answer for the following question based on the past month. w
I do not feel sad.
I feel sad.
I am sad all of the time and I can't snap out of it.
I am so sad and unhappy that I can't stand it.

Question Title
22. Please select one answer for the following question based on the past month. w
I am not particularly discouraged about the future.
I feel discouraged about the future.
I feel I have nothing to look forward to.
I feel the future is hopeless and that things cannot improve.

Question Title
23. Please select one answer for the following question based on the past month. w
I do not feel like a failure.
I feel I have failed more than the average person.
As I look back on my life, all I can see is a lot of failures.
I feel I am a complete failure as a person.

Question Title
24. Please select one answer for the following question based on the past month. w
I am not dissatisfied.
I don't get much satisfaction out of things as I used to do.
I don't enjoy things the way I used to.
I don't get real satisfaction out of anything anymore.
I am dissatisfied or bored with everything.

Question Title
25. Please select one answer for the following question based on the past month. w
I don't feel particularly guilty.
I feel guilty a good part of the time.
I feel quite guilty most of the time.
I feel guilty all of the time.

Question Title
26. Please select one answer for the following question based on the past month. w
I don't feel I am being punished.
I feel I may be punished.
I expect to be punished.
I feel I am being punished.

Question Title

27. Please select one answer for the following question based on the past month. w
I don't feel disappointed in myself.
I am disappointed in myself.
I am disgusted with myself.
I hate myself.

Question Title
28. Please select one answer for the following question based on the past month. w
I don't feel I am any worse than anybody else.
I am critical of myself for my weakness or mistakes.
I blame myself all the time for my faults.
I blame myself for everything bad that happens.

Question Title
29. Please select one answer for the following question based on the past month. w
I don't have any thoughts of killing myself.
I have thoughts of killing myself, but I would not carry them out.
I would like to kill myself.
I would kill myself if I had the chance.

Question Title
30. Please select one answer for the following question based on the past month. w
I don't cry any more than usual.
I cry more now than I used to.
I cry all of the time now.
I used to be able to cry, but now I can't cry even though I want to.
Question Title
31. Please select one answer for the following question based on the past month. w
I am no more irritated by things than I ever was.
I am slightly more irritated now than usual.
I am quite annoyed or irritated a good deal of the time.
I feel irritated all the time.

Question Title
32. Please select one answer for the following question based on the past month. w
I have not lost interest in other people.
I am less interested in other people than I used to be.
I have lost most of my interest in other people.
I have lost all of my interest in other people.

Question Title
33. Please select one answer for the following question based on the past month. w

I make decisions about as well as I ever could.
I put off making decisions more than I used to.
I have greater difficulty in making decisions more than I used to.
I can't make decisions at all anymore.

Question Title
34. Please select one answer for the following question based on the past month. w
I don't feel that I look any worse than I used to.
I am worried that I am looking old or unattractive.
I feel there are permanent changes in my appearance that make me look unattractive.
I believe that I look ugly.

Question Title
35. Please select one answer for the following question based on the past month. w
I can work about as well as before.
It takes extra effort to get started at doing something.
I have to push myself very hard to do anything.
I can't do any work at all.

Question Title
36. Please select one answer for the following question based on the past month. w
I can sleep as well as usual.
I don't sleep as well as I used to.
I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
I wake up several hours earlier than I used to and cannot get back to sleep.

Question Title
37. Please select one answer for the following question based on the past month. w
I don't get more tired than usual.
I get tired more easily than I used to.
I get tired from doing almost anything.
I am too tired to do anything.

Question Title
38. Please select one answer for the following question based on the past month. w
My appetite is not worse than usual.
My appetite is not as good as it used to be.
My appetite is much worse now.
I have no appetite at all anymore.

Question Title
39. Please select one answer for the following question based on the past month. W
I haven’t lost much weight, if any, lately.

I have lost more than five pounds.
I have lost more than ten pounds.
I have lost more than fifteen pounds.

Question Title
40. Please select one answer for the following question based on the past month. w
I am no more worried about my health than usual.
I am worried about physical problems like aches, pains, upset stomach, or constipation.
I am very worried about physical problems and it's hard to think of much else.
I am so worried about my physical problems that I cannot think of anything else.

Question Title
41. Please select one answer for the following question based on the past month. w
I have not noticed any recent change in my interest in sex.
I am less interested in sex than I used to be.
I have almost no interest in sex.
I have lost interest in sex completely.

Question Title
42. Please select one answer for the following question based on the past month.
I have experienced numbness or tingling.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it was not pleasant at times.
Severely, it bothered me a lot.

Question Title
43. Please select one answer for the following question based on the past month.
I have experienced feeling hot.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
44. Please select one answer for the following question based on the past month.
I have experienced wobbliness in my legs.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
45. Please select one answer for the following question based on the past month.
Feelings of being unable to relax.
Not at all.

Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
46. Please select one answer for the following question based on the past month.
Experiencing fear of the worst happening.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
47. Please select one answer for the following question based on the past month.
Experiencing dizziness or being lightheaded.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
48. Please select one answer for the following question based on the past month.
Experienced my heart racing/pounding.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
49. Please select one answer for the following question based on the past month.
Feeling unsteady.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
50. Please select one answer for the following question based on the past month.
Feeling terrified or afraid.
Not at all.
Mildly, but it didn't bother me much.

Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
51. Please select one answer for the following question based on the past month.
Feeling nervous.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
52. Please select one answer for the following question based on the past month.
Feelings of choking.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
53. Please select one answer for the following question based on the past month.
Experienced trembling hands.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
54. Please select one answer for the following question based on the past month.
Feeling shaky or unsteady.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
55. Please select one answer for the following question based on the past month.
Feeling that I will lose control.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
56. Please select one answer for the following question based on the past month.
Having difficulty in breathing.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
57. Please select one answer for the following question based on the past month.
Feeling a fear of dying.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
58. Please select one answer for the following question based on the past month.
Feeling scared.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
59. Please select one answer for the following question based on the past month.
Experiencing indigestion.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
60. Please select one answer for the following question based on the past month.
Feeling faint or light-headed.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
61. Please select one answer for the following question based on the past month.
Experienced my face being flushed.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
62. Please select one answer for the following question based on the past month.
Experienced hot and/or cold sweats.
Not at all.
Mildly, but it didn't bother me much.
Moderately, it wasn't pleasant at times.
Severely, it bothered me a lot.

Question Title
* 63. The following 11 questions are from the ASI-SR (substance use assessment). There are NO identifying factors in this survey. Please answer to the best of your ability and select "none" if the question does not apply to you.
How many days did you drink alcohol in the past 30 days?
None
1-3 days
4-6 days
7-10 days
11-15 days
16-20 days
21 days or more

Question Title
* 64. Of those days in question 63, how many days did you drink to intoxication?
I did not drink
1-3 days
4-6 days
7-10 days
11-15 days
16-20 days
21 or more days

Question Title
* 65. How much money would you say you spent on alcohol in the past 30 days?
I did not spend any money on alcohol.
$1 - $50
$51 - $100
$101 - $150
$151 - $200
Over $200

Question Title
* 66. In the past 30 days, how many days did you experience alcohol or alcohol-related problems?
I did not experience any alcohol or alcohol-related problems.
1-3 days
4-6 days
7-10 days
11-15 days
16-20 days
21 days or more

Question Title
* 67. If you have experienced alcohol or alcohol-related problems in the past 30 days, how troubled or bothered have you been by these problems?
I have not experienced any alcohol or alcohol-related problems.
I have been slightly bothered by them.
I have been moderately bothered by them.
I have been considerably bothered by them.
I have been extremely bothered by them.

Question Title
* 68. If you have experienced any problems due to alcohol in the past 30 days, how important is treatment for these problems?
I did not experience any alcohol or alcohol-related problems.
It is not important for me to get treatment for the problems.
It is slightly important to me to get treatment.
It is moderately important to me to get treatment.
It is considerably important to me to get treatment.
It is extremely important to me to get treatment.

Question Title
69. Not including drugs taken as prescribed by your doctor, select the drugs you have taken in the past 30 days.
None
Heroin
Methadone
Other opiates/analgesics
Barbiturates
Sedatives
Cocaine
Amphetamines
Cannabis
Hallucinogens

Question Title
* 70. How many days have you used more than one substance, including alcohol, in the past 30 days?
None
1-3 days
4-6 days
7-10 days
11-15 days
16-20 days
21 or more days

Question Title
* 71. In the past 30 days, how many days have you experienced drug or drug-related problems?
I have not experienced any drug or drug-related problems.
1-3 days
4-6 days
7-10 days
11-15 days
16-20 days
21 or more days

Question Title
* 72. If you have experienced drug or drug-related problems in the past 30 days, how troubled or bothered have you been by these problems?
I did not experience any drug or drug-related problems.
I have been slightly bothered by the problems.
I have been moderately bothered by the problems.
I have been considerably bothered by the problems.
I have been extremely bothered by the problems.

Question Title
* 73. If you have experienced any problems due to drugs in the past 30 days, how important is treatment for these problems?
I did not experience any drug or drug-related problems.
It is not important for me to get treatment.
It is slightly important to me to get treatment.
It is moderately important to me to get treatment.
It is considerably important to me to get treatment.
It is extremely important to me to get treatment.

Question Title
74. The following questions are based on resilience factors. Please answer to the best of your ability.
I am able to adapt to change.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Question Title
75. I can deal with whatever comes along.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Question Title
76. I try to see the humorous side of problems.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Question Title
77. I understand that coping with stress can strengthen me.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Question Title
78. I tend to bounce back after illness or hardships.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Question Title
79. I am able to achieve goals despite there being obstacles.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Question Title
80. I can stay focused under pressure.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Question Title
81. I am not easily discouraged by failure.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Question Title
82. I think of myself as a strong person.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Question Title
83. I can handle unpleasant feelings such as anger, pain, and sadness.
Not true at all.
Rarely true.
Sometimes true.
Often true.
True nearly all of the time.

Appendix D

IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

June 23, 2023

Tammy Grayson
Stephen Ford

Re: IRB Exemption - IRB-FY22-23-1473 A Correlational Study Of The Resilience Factors That Promote Mental Health In First Responders

Dear Tammy Grayson, Stephen Ford,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects;

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, PhD, CIP
Administrative Chair
Research Ethics Office