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Editor's Note By: Gregory L Walterhouse Editor-in-Chief

Thank you for your interest in the Tenth Edition of the *IPSA Journal*. The IPSA Journal is a scholarly resource available to all public safety professionals. The *IPSA Journal* was fortunate to have several public safety authors and peer reviewers contribute to this executive-level, double blind peer-reviewed publication. The *IPSA Journal* is an opportunity to publish manuscripts about leadership issues and best practices applicable to all facets of public safety, and to provide the public safety community with timely access to pertinent information that impacts decision-making, policy, administration, and operations. Our readers represent the entire public safety community: law enforcement, fire service, EMS, 911 telecommunications, public works (water, sanitation, and transportation), public health, hospitals, security, private sector, and emergency management. In this issue, readers will see the following peer-reviewed manuscripts:

1. Chaos Engineering: Exploring Adversities Role in Suicide Prevention Among Firefighter Populations A Qualitative Descriptive Inquiry by Andrew Wilcox and Rodger Broomé, Ph.D., Utah Valley University.

2. Sleep Deprivation and Adverse Health in Firefighters by Chad Thompson, Bowling Green State University.

3. Factors Affecting Volunteer Firefighters' Work, Family and Volunteer Balance to Serve by Christopher J. Schultz, DPA, Thomas Edison State University.

4. Off-Duty Discipline of Public Employees: Extension of State Authority under the First Amendment by Gregory L. Walterhouse, Bowling Green State University.

The *IPSA Journal* has a systematic process in place for approval, rejection, and resubmissions of manuscripts. The *IPSA Journal* enlists peer reviewers made up of public safety practitioners and academicians with experience in scholarly writing to review all manuscripts.

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

Stay safe,

Gregory L. Walterhouse

Chaos Engineering: Exploring Adversities Role in Suicide Prevention Among Firefighter Populations

A Qualitative Descriptive Inquiry

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Chaos Engineering: Using Adversity to Prevent Suicide Among Firefighter Populations A Qualitative Descriptive Inquiry

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Abstract

A qualitative inquiry of the relationship between manufactured stress in a person's life and their ability to utilize such experiences to build resilience for future personal trials and how this can be a tool to prevent suicide among firefighter populations. Fire departments are more likely to lose a member to a suicide event than they are to a fireground accident or emergency. In addition, research continues to show the correlation between adverse stress responses and negative health outcomes such as myocardial infarction, stroke, dementia, and cancer. The purpose of this research is to illustrate the intrinsic value of resiliency gained through the phenomena of "Chaos Engineering" and its associated ability to assist an individual in overcoming the negative effects of stress and trauma. That such resiliency can be created and in turn utilized by an individual to face future stressors with improved results thus have the potential to decrease the likelihood as well as the severity of suicidal ideations. This inquiry interviewed 10 participants of an event known as the Tribute Crucible and using qualitative methods reviewed how their experience in participating shaped their perspective towards stressful events in their life even years after participation. The results of this inquiry found that every participant has continued to reflect on their experience when faced with stressful and/or traumatic circumstances. Additionally, they expressed how they feel they are more resilient in their lives as a direct result of the Tribute Crucible. Based on these findings we believe it to be beyond reasonable that firefighters who can use the principles of Chaos Engineering will develop the ability to be more resilient in the face of the adverse consequences of a career as a firefighter and thus be less likely to experience suicidal ideations and decrease the number of suicides among firefighters.

Key Words: Suicide Prevention, Firefighter, Resiliency, Chaos

Introduction

The idea that firefighters will experience both emotional and physical trauma is a priori statement given the very nature of the job description. With this trauma comes both the physical and mental bumps and bruises of responding to a myriad of emergency situations and circumstances. However, the "scars" left behind by these occurrences throughout the course of a career are not always the visible kind. The mental and emotional trauma endured by the firefighter has lasting effects in all aspects of the firefighter's life (Gramlich & Neer, 2018). While many firefighters and other first responders live successful and healthy lives both during their time of service and after their careers have ended, the impact of the stress of this profession will undoubtedly manifest itself in some form. Whether it be in hormonal imbalances, joint and other musculoskeletal injuries, drastic increases in the prevalence of cancer, or a greater likelihood of cardiovascular and pulmonary illness (Farioli, et al., 2014) the list of maladies that occur at elevated rates among firefighters continues to expand. All of which is in addition to the mental wellness issues that continue to plague emergency services. Such as: addictive coping behaviors, binge drinking, marital and family issues (Gawrych, 2010), drug dependency, and suicidal ideations, attempts, and unfortunately successes (Carey, et al., 2011; Henderson, et al., 2016).

The current solution, while demonstrably effective in many cases, is to treat the trauma after it has occurred; to diagnose the individual as mentally injured and then to treat with therapy, counseling, or other treatment modalities. And yet, suicide remains a top ten leading cause of death among all age groups in the United States. Nationally, the age-adjusted suicide rate is 13.0 per 100,000 (Kochanek et al., 2016). Firefighters and EMS providers have been shown to have suicide rates of 17.2 to 30.5 suicides per 100,000 (Mills, 2014; Heitman S. C., 2016; Martin, et al., 2017).

This project aims to address the question: *how can experiential training promote resilience prior to experiencing trauma itself?* Is there a possibility that chaos, as defined as disorder, confusion, and discomfort, can be utilized to create an intentionally adverse experience that will allow an individual to build resilience in the face of stress and trauma when such circumstances are beyond their control? Can these experiences be used to create greater

resiliency against the mental effects of trauma than just reactionary treatment alone? Additionally, could improved resiliency gained through such experiences aid in preventing suicidal ideations and behaviors among firefighter populations?

To improve our understanding of this potential effect upon an individual's resiliency this literature reviewed the personal experiences of participants in an event known as the Tribute Crucible. This event was designed to push the mental and physical boundaries while promoting a growth mindset in the face of adversity. The purpose of this research was to identify whether these individuals utilized their experience in the face of stress and trauma years later and whether they felt they were more resilient as a direct result of their participation.

Furthermore, we aim to identify the possible connection between these effects and how these circumstances could potentially be applied to firefighter training to "pre-treat" common consequences because of repeated exposure to traumatic life experiences.

Literature Review

Since 2011, on average, more firefighters have committed suicide each year than have been killed in job related events also known as Line of Duty Deaths (LODD) (Dill, 2019). In addition, the estimated reporting by the Firefighter Behavioral Health Alliance, currently the only organization to officially track suicides among firefighters, estimates that these numbers are only at 65% reporting accuracy (Dill, 2019). The National Fallen Firefighters Foundation reported that suicide among firefighters is three times more likely to happen in a fire department than a line of duty death (National Fallen Firefighter Foundation, 2014). These significant trends and phenomenon relating to the mental health impacts of firefighting are underrepresented in the scientific and research communities. Although awareness and treatment are increasing throughout the U.S. (Choi, et al., 2017), the trends continue to highlight the frequency of maladaptive outcomes relating to firefighter mental health and wellness (Carey, et al., 2011; Boffa, et al., 2017; Stanley et al., 2016; Stanley, et al., 2015; Stanley, et al., 2018).

With such numbers of firefighters committing suicide, as well as coping with suicidal ideations, there is clearly room for improvement in terms of our understanding and treatment

of mental health crisis among firefighters. The research in this study is not meant to belittle methods for treatment or to provide critique as to the success or failure or such interventions.

This idea was first used with promising results by Netflix in 2010 in software and computer development and was known as 'Chaos Engineering' (Hochstein, 2019). Chaos engineering is the discipline of "experimenting on a system in order to build confidence in the system's capability to withstand turbulent conditions in production" (Hochstein, 2019). Using chaos built into a software's programming allowed for the program to adapt and overcome influences, or faults, that would otherwise cause failure within the system. The purpose of this was to improve their software and computer server functions to adapt and overcome obstacles automatically (TechTarget, 2013). Essentially, they were attempting to code resiliency into their system prior to the system being under attack; "Chaos [engineering] aims to encourage Netflix engineers to design software services that can withstand failures of individual instances" (Basiri, et al., 2016). In essence, they answered the question of whether chaos is valuable to resiliency. That chaos is in many ways key to the building of resiliency within the targeted program.

But humans are not computers. We are not lifeless devices that can be programmed and provided with regular software updates. The chaos we experience, especially for a firefighter, does not come with an 'opt-out' option. This, however, does not disqualify this theory from being applicable to human behavior and adaptation. The same core principles that govern chaos engineering in terms of software development can be applied to the behavior of individuals to achieve a similar result: the avoidance of system failure.

Specifically, can 'chaos' be engineered, in training scenarios outside of emergency responses, in such a way that it provides a measurable and beneficial long-term effect on an individual's ability to be resilient when experiencing trauma, or even repeated trauma over the course of a long career in the fire service? By "engineering" chaos in safe and structured settings we theorize the firefighter will have valuable insights and resources to their own mental capabilities and capacities to better handle the unstructured and often unsafe job requirements when responding to emergency situations, and thus be better suited to prevent and protect against the factors that lead to suicide and suicidal ideations.

The purpose of this research is not the result of intentionally replicated circumstances regarding firefighter specific calls. Such an exercise would equate to a training exercise consistent with any fire departments normal procedures and operations. To focus on the phenomena of resilience because of chaos a qualitative analysis was conducted using participants of an outdoor challenge event called the Tribute Crucible (TC).

Methodology

The qualitative descriptive inquiry was selected to explore how participants describe their experience, understanding, and engagement with an experiential resilience program. This study interviewed selected participants who volunteered to share their experience participating in the Tribute Crucible (TC). All participants who took part in this study were volunteers willing to share their personal experiences and were not compensated for their participation. At no point were participants prepared for this interview with any form of questionnaire or other materials, nor did they participate in this event with the knowledge it would be part of a mental health study. Their participation in this event was of their own personal choice for a variety of unique and individual reasons.

This study was conducted during the COVID-19 pandemic and institutional as well as local policies regarding isolation and distancing were followed. This required that interviews be conducted using a variety of video conference methods and in person interaction was strictly limited. These one-on-one interviews were conducted using a semi-structured format and the data was then transcribed and coded using an IPA coding method. The purpose for this was to allow the participant to express their experiences without diminishing their own voice through an overly structured interview and/or questionnaire.

The TC was a private and voluntary event that took place over thirty-six (36) consecutive hours. This event consisted of physical, mental, and emotionally challenging obstacles structured with proper guidance in the Wasatch Mountains in the western United States. These obstacles focused on personal growth and development under the backdrop of paying homage to the lives of firefighters, police officers, rescuers and civilians lost during the rescue efforts of September 11th, 2001.

The TC event and its participants were specifically selected for this review because of its connection to a significant event within firefighter culture: the tragic events of 9/11 where 343 firefighters were killed in the line of duty. Thousands more have suffered in the years since due to directly related illnesses and injuries (9/11 Health Watch, 2015; Soo, et al., 2011). Connections to 9/11 were unique to each participant; some participants were FDNY firefighters who lost close friends, others were firefighters who had responded to Ground Zero with FEMA response teams, and some participants were simply civilians who had vivid memories and personal experiences with that tragic day. This allowed for the experiences expressed from the TC to be equally unique. This assisted in delineating the possibility that even though personal experiences leading up the TC the results gained shared many valuable commonalities. In addition, it was a point of emphasis in the research to understand how the effects, if any, of this event had transpired or evolved since participation took place. The lapsed amount of time provided our research a greater understanding of how this event potentially continued to impact the life of the participant in any way either positive or negative.

Coding and Analysis

In total, ten participants were individually interviewed following the same semi-structured interview format. These interviews were recorded and transcribed with personal identifiers removed. Each transcription was then reviewed for emerging themes and phenomena related to the research question using standard research practices (Braun & Clarke, 2013).

Protocols were used to guide the semi-structured interview. While each participant was asked the same questions each interview was granted the fluidity to not hinder participant response while simultaneously allowing for the interview to explore in more depth responses based on information that was being provided in the interview.

By using Interpretative Phenomenological Analysis (IPA) to review the data, our goal was not to find succinct codes between each participant, but to identify significant common phenomena between everyone based on their personal responses. Such a process allowed the research to focus on shared personal experiences provided by the participant and thus allowing identified themes to emerge organically.

Analysis of common phenomena found was recorded to determine whether a consistent theme existed that demonstrated support of, or opposition to, the research question. While other research in this field could possibly benefit from diagnostic tools such as the CAPS-IV test to associate mental health conditions with thematic analysis, this was deemed unnecessary for the purpose of this research. Our goal in coding and analyzing the statements provided by the participants was to determine whether their experience has continued to assist them during times of stress, to determine whether their experience with the TC is something they continue to reflect upon when facing challenging circumstances even after a significant amount of time has passed.

Participants

Of the 17 individuals who participated in the first TC in 2017, ten were willing and able to participate in our study. Of the seven who did not participate, two stated scheduling conflicts, but that they had a positive experience with the crucible. Three individuals could not be reached due to a change in contact information. One chose not to participate without providing further details. The last participant was withheld from participating in the study as they were the organizer of the event and assisted in the initial stages of this project thus potentially compromising the results with personal bias.

Of the ten who participated in the interview process three (3) were active firefighters, three (3) were professional fitness coaches and/or former competitive athletes, and four (4) had no previous professional fitness or firefighting background (Table 1).

While this study focuses on the mental health of firefighters, it was deemed important to interview participants outside of emergency response to determine whether any potential benefits were not solely related to consistent social ideologies common among professional firefighters.

The participants were not vetted medically for any specific medical diagnosis and CAPS-IV scores were not obtained. Previous medical history regarding mental health diagnosis was not included in the questioning. Instead, the questions were designed to focus on perceptions of stress and hardship from specific experiences and the personal reflections associated. While medical histories were not asked to be provided, if during the interview process such

information was provided willingly it was not discouraged to not disrupt the organic storytelling of the participant.

Results

The questions asked were designed to investigate the effects the TC had on the participant's outlook and processing abilities when encountering stress. The goal of the interviews was to discover whether or not there was improvement in their personal perception of stress, and whether or not the participant gave credit to their TC experience for any changes (positive or negative) in how they respond to and process stressful stimuli and phenomenon in their personal lives, "a severe level of stress at home or at work [is] associated with an increased risk of suicide" (Feskanich, et al., 2002). The results of this study aim to address suicide prevention via stress reduction from increased resiliency. Each participant was asked questions regarding stress, trauma, suicide, and suicidal ideations in their personal lives and discussed how the TC affected those experiences when present (Figure 1). Of the ten participants who were interviewed, and responses analyzed, various levels of stress and trauma were reported: 70% of participants admitted to having suicidal ideations, 29% of those with ideations admitted to attempting suicide; 30% of participants stated that prior to participation in TC they used drugs or alcohol to cope with stress, while 100% interviewed stated that following the TC they no longer turned to substances to process stress.

Benefits of the Tribute Crucible

The qualitative analysis of these interviews highlighted many themes and outcomes among the participants. These identified themes expressed by participants are demonstrated in Figure 2. While a wide range of thematic phenomena were expressed, this qualitative analysis chose to focus on the following to demonstrate the most common and essential elements of each participants' unique experiences in relation to the posed research question and purpose:

- Bonding in trials.
- Value of chaos.
- Growth from adversity.
- Deepening of personal relationships.
- Shifts in perspective.

- Benefits of vulnerability.

- Expressing gratitude.

- Finding personal strength.

Participant quotes have been edited only to remove filler words.

Bonding in trials

The most common theme among participants was the importance of bonding with one another during the TC. While expressed in a variety of ways each participant focused not only on the bonds formed, but also that these bonds were beneficial, even responsible at times, for carrying them through difficult elements of the TC.

> *The TC helped me see that connection with people helps with resiliency. By the end you're all very connected, you have a bond. Many times, those people are helping you get through it when you don't want to keep going, and it emphasized the importance of a strong tribe.*

As highlighted by Participant 5, it was this bonding that helped to build resilience at a moment where they felt they "[didn't] want to keep going". But was this bond superficial? Was this a bond formed in adversity that only lasted as long as the adversity itself? Many of the participants expressed that the bonds have remained among one another long since finishing the TC. And these bonds – or rather the memory of these bonds – have continued to be beneficial to the participants when facing trials in their personal lives.

> *The TC put us all together collectively on a different field on a personal level. If any one of them called me up right now and were in need of anything because of the experience I had with them, whatever they needed I would make it happen to the best of my ability because I had that experience with them and we connected on such a profound level.*

This directed our analysis to attempt to better understand the reason for the formation of these bonds. Was it specific tasks or events within the TC? Was it due to similar backgrounds or commonalities among participants? The most common phenomena among all participants were the adversity they endured together both physically and mentally. According to Participant 2:

During the TC you're really broken down mentally and physically to where your emotions come to the surface. I would say events like the TC are so beneficial because it takes people and puts them in a situation where your emotions are exposed collectively as a group to where you can bond with one another more closely.

It stood to reason that these bonds did more than just build friendships. They provided purpose to the individual. That these bonds and the purpose experienced because of them created the "intention to contribute to the well-being of others" (Duckworth, 2016).

Value of chaos

Chaos is a phenomenon that has been and will continue to be studied by humankinds' greatest minds. Vast theories and complex equations have been dedicated to the understanding of chaos, not just the existence of chaos in relation to the human psyche, but in its intrinsic value to the resiliency of an individual.

In interviewing the participants of the TC, this study aimed to understand their opinion of chaos, and to gain an understanding if that opinion, to them, applied to the crucible itself. Each participant was asked if they believed there to be value to chaos. While 50% of participants described in some form a belief that the TC was chaotic, 100% of participants expressed a personal belief that chaos holds value to self-improvement and resiliency. As Participant 5 described:

By simulating that unpredictability of life, we feel like we have a lot of control when we don't, so I think by emphasizing that chaos absolutely helps with your resiliency and your ability to adapt to the unpredictability of life.

Some participants even described their own struggles in handling chaos and/or chaotic moments in their life and that the TC improved their ability to handle that which was outside of their control, as highlighted by Participant 3:

Chaos to me is something that isn't controlled, it is something very much
out of control. So, for me in that situation you have to just accept it. I've
struggled with that and with being ok with stuff out of my control. Looking
back the TC has helped me with that.

The description of chaos among each participant was very subjective yet each description seemed to also parallel the next. While they all used different words, experiences, or descriptions they all seem to share a conclusion that chaos in their life has been a source of growth and that the TC has improved their ability to recognize chaos and seek to benefit from its presence in their individual lives.

Growth from adversity

The initial goal of this study was to better understand resiliency as it relates to trauma, but with an emphasis on if and how such resiliency could be built or acquired prior to encountering traumatic events. One of the major themes among participants that alluded to such increases in this resiliency was what they described as personal growth, especially personal growth as a direct result of facing adversity (Lee, et al., 2014; Joseph & Linley, 2006). The most impactful phenomena observed was that this change, or personal growth from the TC continued to foster further growth years after their participation. As stated by Participant 1:

Since the TC my life took a pretty hard nose-dive, but fortunately for me it
wasn't as far down as it could have been because I was able to recollect
back on that experience and say 'you've done hard things you can turn this
around.' I have been able to draw back on my TC experience and that has
helped me in my mental health.

The TC was intentionally designed to push not just physical limitations but to challenge each participants' mental endurance. As such, many participants highlighted personal growth that has allowed them to face stress, trauma and conflict with more confidence and resiliency. Such feelings were reflected on by Participant 7:

I do think I am more resilient because what I did was really tough and just
knowing I was able to go through all that physical and mental torture...if I

can get through something like that then I know mentally I can get through

anything.

As well, Participant 3 expressed how they continue to experience growth in how they view obstacles in their life:

> *I would say the TC definitely helped me. For sure it helped me to identify that I can approach obstacles and find a way through it because that is what we had to do.*

Deepening of personal relationships

While all participants (n=10) highlighted the bonds that they formed with each other during the TC as well as deepening their understanding of the need for and importance of bonds in their lives to overcome trials, there were many participants whose reflections highlighted their personal relationships outside the TC as well. Relationships with their spouses, children, and other close friends and family were improved and deepened because of their participation in the TC. This was highlighted especially by Participant 5, who described their personal relationships as being strengthened and more fulfilling since the TC, as well as improvement in their relationship with themself.

> *My personal relationships are way more fulfilling now because of being able to let people in and letting people help me more. I would also say being more present in my relationships than before the TC. Being more present to other people's needs. I'd say for sure those relationships are more fulfilling now. When we let people in those relationships strengthen and then our relationship with ourselves strengthens as well.*

For some, this was unexpected. Participant 10 described their emotions upon seeing their family waiting for them at the finish and the experience they had that improved their resiliency because of the deepening of those relationships:

> *What I was not prepared for was my family standing at the finish line and how emotional I became. I didn't let them see my emotion but I almost burst into tears seeing them waiting for me to know that I had finished and that was really remarkable to me. And I think that if there is a direct*

correlation to how I am now in my own personal and family relationships
because of The Crucible it's added dramatically to my resiliency and to my
I've been through hard things and because I've been through hard things
everything else seems less hard.

The changes and improvement in personal relationships found in the participants responses were consistent with further research in relation to post-traumatic growth; "...the forms of post-traumatic growth that scientists have observed thus far, and how the term refers to deep-seated changes in the person's sense of self, their views on life, priorities, goals, and their approach to relationships." (Durkin & Joseph, 2009, p. 14).

Shift in perspective

While many of the statements made by participants included more than one theme, it was important for analysis to attempt to delineate the main or most significant theme. This was especially noteworthy for understanding the shift and improvement of participants' generalized perspectives. This 'new' perspective because of the TC was something that 70% of participants articulated in various ways.

The TC was hard but now I am stronger because it gave me a different
perspective. Everything hard we go through in life you come out stronger
and more resilient.

The most common shift in personal perspective was how the individual viewed difficult circumstances and/or trials. Because of their experience with the TC such situations were no longer perceived as being insurmountable. This was especially noted in the statements provided by Participant 5 and Participant 10:

Before the TC I let things worry me more than they needed to. The TC puts a light
on the fact that we're not really in control ever. So worrying doesn't help the
situation at all. It definitely gave me a new perspective.

[In 2020] my world was falling apart and I thought on the moments in my life
including the TC and I realized I am capable of so much more even when things
are horrific.

Research on post-traumatic growth (PTG) has shown that such changes in perspective help to negate the negative impact of trauma, and that such perspectives improve self-mastery over the effects of stress, thus improving resilience for processing and overcoming future trauma. "It is also plausible, however, that high pre-existing levels of mastery may provide resources for individuals to grow from events" (Jayawickreme & Blackie, 2014; See also Kashdan & Rottenberg, 2010). This mastery, or *psychological flexibility* (Kashdan & Rottenberg, 2010)*,* over perception in the face of adversity among TC participants shows promising opportunities for resilience to future trauma as something that can be cultivated through prior experiences and events.

Benefits of Vulnerability

The word 'vulnerability' may conjure thoughts of weakness, fragility, and being exposed to the potential for harm. But in the context of building resiliency, is vulnerability an asset? As described in *Chaos Engineering,* having a system left vulnerable to attack was what would lead the program itself to becoming more resilient and better equipped for further and greater attacks in the future (Basiri, et al., 2016; Oliver, et al., 2006).

As this paradigm was introduced to the participants, it was imperative to not lead them along a certain path in relation to their experience and views on vulnerability. While 100% of participants highlighted the importance of allowing others to help, and being humble in the face of adversity, the objective of this theme was to see how many participants in their own words described personal growth and benefit from being physically, mentally, and/or emotionally vulnerable during their TC experience.

From this perspective it was noted that 60% of the participants expressed benefiting from such vulnerability both during the TC as well as in the years since because of this experience.

> *We experienced every emotion you could possibly have imagined in those*
> *36 hours. There is power in letting yourself feel those emotions. I can say I*
> *am a better person and a more resilient person having gone through that*
> *in the TC*

An argument could be made that such an experience is more a reflection of the participant being humble and that humility, not vulnerability, is a better description of these experiences. However, humility – while important – is related to behavior, choice, and to personal characteristics. Vulnerability is the unknown, the weakened, and the subjugated. By experiencing an event such as the TC these participants were pushed beyond their conscious decision to choose to be humble, and instead were subjected to becoming physically and emotionally vulnerable, and by doing so came out stronger and more resilient. This was especially well described by both Participant 5 and Participant 3

> *[The TC] is so outside your comfort zone. Not only physically pushing yourself to your physical limit, but also on top of that having a lack of sleep and the unknown definitely play with creating resiliency within me. I feel like it for sure ended up doing that. In order to create that resiliency, I had to be pushed to my mental and emotional coping capability.*

> *Can you push beyond your limits and mental capacity? It's incredible how when you're pushed to the limit you can be in this sensitive broken state to where the toughness façade is taken away and you are exposed, and you can be able to open up and express how you're really feeling.*

Vulnerability, as exemplified by the TC participants, was critical in the development and growth of their own personal resiliency.

Expressing Gratitude

Numerous studies and scholars have explored the connection between gratitude, resiliency, and PTG. Various studies indicate that gratitude can decrease the negative effects of stress, and increase the positive effects of PTG (Krysinska, et al., 2015; Vieselmeyer, et al., 2017; White, et al., 2017; Kleiman, et al., 2013). It was not surprising that participants of the TC

expressed gratitude not just in their experience, but as a causation of improved resiliency. While the percentage of participants whose statements reflected such a notion appeared low (n=4), it is important to note that at no point were participants asked to reflect on gratitude or whether they were grateful in some form or another for their experience. While further research into such a phenomenon would be needed to prove such a theory, it is the assumption of this study that more participants would have expressed similar experiences had it been highlighted directly by the researchers.

Participant 5 particularly expressed gratitude for their improvement in personal resiliency and mental health:

> *Gratitude is one of the main if not the main ingredients in resiliency. To be able to see that silver lining makes you keep going. Having an appreciation in those moments, in whatever situation you're in is what I would say gives me the most resiliency. It gives you hope. So when things are really hard, or unbearable or unpredictable being able to find gratitude for something in those moments automatically instills a hope that you can do it, that it's all working for your good.*

Participant 4 also expressed gratitude as the biggest area of personal development because of participating in the TC, and that this improved gratitude was a direct cause of contribution to their mental health:

> *Having a greater appreciation, that to me was probably my number one area of growth from the TC. And it has contributed to my mental health. I felt another level of appreciation and recognizing those blessings. I feel I have always been a thankful person, but the change on a personal level was leaps and bounds.*

Reflections on gratitude were deliberately included into this study to highlight the powerful nuance that gratitude plays in the role of resiliency of a person and how they can overcome the negative effects of stress, trauma, and adversity.

Finding Personal Strength

Another theme that was deemed significant among participants focused on their personal views of personal strength and self-discovery as they individually learned what they were truly capable of in the face of adversity.

Such a theme in many ways correlates with the previous theme of *Growth in adversity*, however, this theme was included as it pointed to experiences that occurred *during* the TC and not just from reflections of changes that occurred *after* the event was over.

Participant 7 reflected on how the TC was difficult yet even during their experience their emotions and feelings were both positive and beneficial.

> *I love that even though I was suffering I loved everything. I loved every minute of it. It was the greatest feeling in the world. I would 100% without a doubt do it again. I loved it.*

Participant 9 also reflected on resiliency as something that can occur in the very moment of trauma and not something that occurs before or after an adverse situation.

> *I think resiliency is just getting back up and fighting. To be truly resilient is to get up when you're truly feeling defeated and put on a smile and do something hard with vigor and intensity. Just never quitting. If you can do that, that is true resilience.*

While improvements in strength without question occur following an event, it was of significance to note that improvements in resiliency can occur in the very moment of adversity itself.

Discussion

Our initial approach to this study was to better understand the concept of *Chaos Engineering* and how intentionally adding chaos to the life of an individual could improve as well as build resiliency to better handle future stressful and traumatic experiences and thus prevent suicidal behaviors. That with this information we could combat the prevalence of suicidal ideation and behaviors found within firefighter populations. The definitive answer to such a complex question is fraught with psychological variables. We do not believe that such a single answer or solution exists in

the realm of psychoanalysis and the understanding of human behavior. But just as a home is not built with a single tool, neither can the negative effects of trauma be treated with a single solution. The intention was to demonstrate how the theory of *Chaos Engineering* can positively impact a wide range of areas that impact quality of life and in turn build resiliency among firefighters to use as they face decades of trauma over the course of their careers. Even though this study did not provide the cure-all to suicide prevention it is our belief that we can state with confidence that there are measurable benefits to building resiliency through engineered chaos in controlled environments. Individuals who participate in such events can improve various positive psychology traits such as resilience, grit, and gratitude (Blalock, et al., 2015).

As described by clinical psychologist Angela Duckworth; "it isn't suffering that leads to hopelessness. It's suffering you think you can't control" (Duckworth, 2016). Resiliency is described as the ability to bounce back, but it requires control of the individual. Intentional suffering as demonstrated by the TC provided improved awareness of how much more control they possessed over stress, trauma, and hardships.

While firefighters are at an increased risk of factors and behaviors that lead to suicide compared to the general population (Antonellis & Thompson, 2012) this does not negate the notion that preventative measures (especially those explored in this study) are any less beneficial to non-firefighter populations.

For many of the participants of the TC, chaos from this event provided that very foundation highlighting what psychological scholars such as University of Nottingham professor Stephen Joseph have previously supposed; "traumatic events can actually be triggers that improve one's life by revealing inner strengths." (Joseph, 2011). In a variety of responses each participant pointed to positive growth, change, and improvement as a direct result of the TC. In addition, these were not simply expressed moments of joy or happiness, neither were these fleeting expressions of motivation. The participants' experiences have been demonstrated to have provided lasting and even permanent changes in behavior, outlook, and coping strategies and abilities as a direct result of the challenge, difficulty, and structure of the TC itself.

Limitations

While the results of this analysis are both positive and promising, important considerations should be considered based on the limitations of this analysis as well as the TC event itself. Each participant expressed a positive change in their mental health because of participating in the TC. However, the TC was not designed as a treatment for mental health or suicide prevention. It is impossible to answer whether outcomes would have differed, either positively or negatively, if such an objective was the purpose of the TC. Also, to consider is that most of these participants had backgrounds professionally and/or personally in fitness and exercise prior to their participation. It is therefore possible that an individual who is not adequately prepared physically for such an event would have a negative experience, potentially creating a negative association between such an intervention and their own personal mental health. As with any physical exercise there are inherent health risks that were not accounted for in this analysis. Medical records, data, or questions were not asked of the participants. While the TC being evaluated for this research did not have any serious medical emergencies among participants, such a circumstance would have potentially changed the perceived outcomes and expressions of everyone.

The authors of this study are not ignorant to the fact that while firefighters were among the participants, they were not a complete representation of those interviewed for this study. We believe that this notion does not invalidate these findings as the effects of stress, trauma, and adversity that can lead to suicidal ideations are not exclusive to firefighters themselves. Additionally, people respond to challenges individually. While this was demonstrated to be successful among these participants in building resiliency such an experience is not guaranteed for everyone. Such experiences and events like the TC should be used as a tool for potential benefit and not as a cure-all for individuals struggling with mental health.

Recommendations

Further research into the presented theories of this project would be of great value to better understand as to whether such events could be a positive and long-term solution for individuals struggling with suicidal ideations and behaviors associated with suicidal risk-factors.

This would include but not be limited to firefighter populations with PTSD diagnoses, the utilization of CAPS-IV measurement scores, utilization of a Likert scale from participant surveys, as well as long-term behavioral analysis of those who participate in the TC or TC type events.

Lessons gained from this project provide greater insight into how to combat suicide among at-risk populations as well as providing further research into the phenomena of how the negative effects of stress and trauma can be addressed prior to a person's exposure. Even though this analysis is but a glimpse into the understanding of firefighter stress and suicide, it possesses the potential to add to the crucial understanding and dialogue that will hopefully lead to the cessation of firefighter suicide.

It is our hope to have provided a valuable resource to firefighters everywhere who are struggling with negative effects of repeated exposure to trauma and feel that suicide is the only escape, and that our efforts can add to the myriad of resources from fellow researchers, clinicians, mental health care providers, and others working tirelessly to end firefighter suicide.

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Table 1

Participant Demographics

Subject ID	Gender	Age Range	Profession
001	Male	35-45	Trainer
002	Male	35-45	Firefighter
003	Male	45-55	Firefighter
004	Female	45-55	Trainer
005	Female	25-35	Trainer
006	Male	25-35	Sales
007	Male	18-25	Sales
008	Male	25-35	Marketing
009	Male	35-45	Firefighter
010	Male	35-45	Entrepreneur

Note. Organizational breakdown of participants' demographic data.

Figure 1

Participant Flowchart
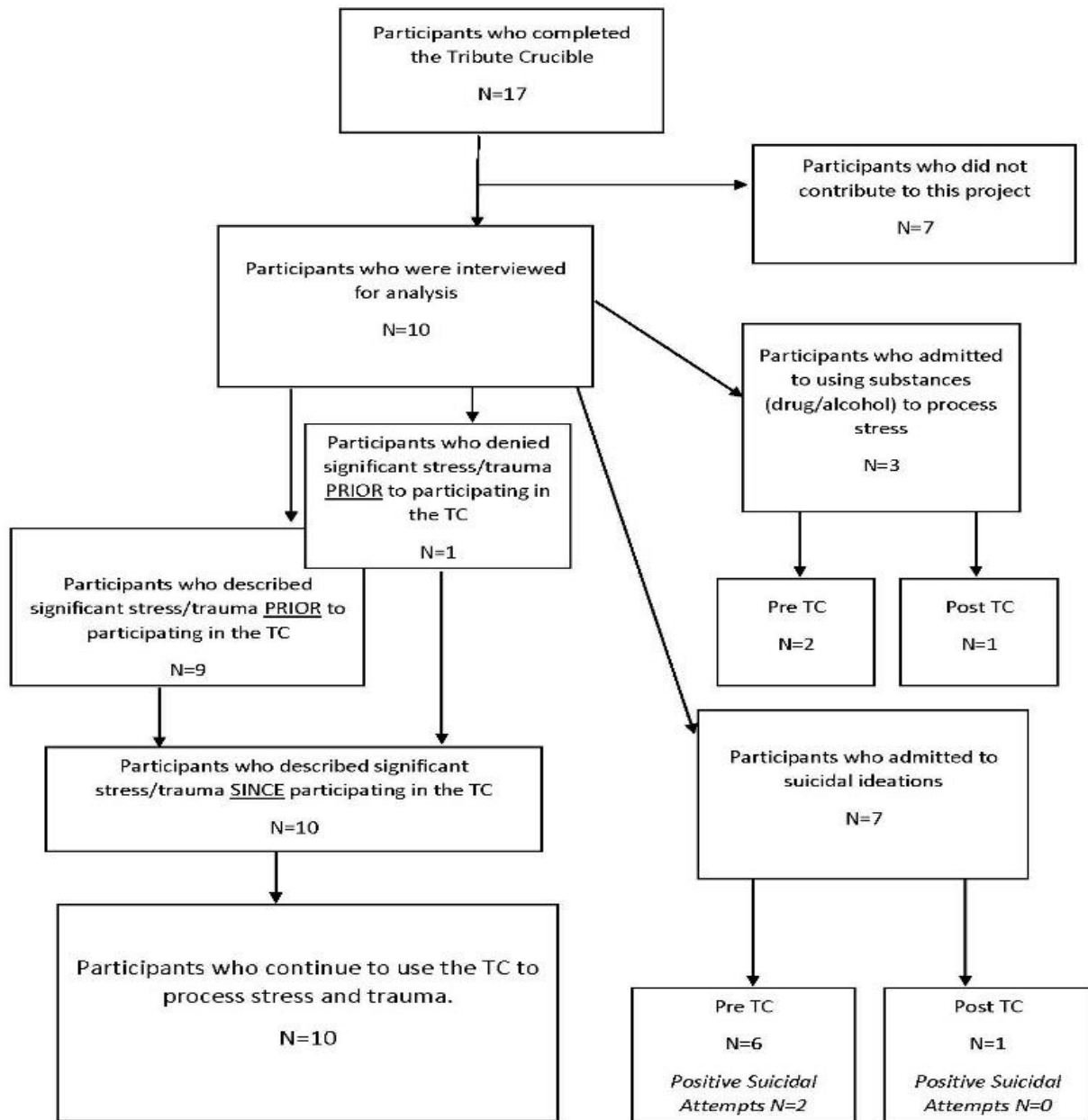
Note. Flow chart denoting the presence of suicidal ideations and behaviors among TC participants who took part in this qualitative study.

Figure 2

Contributing Themes

Contributing Themes Towards Personal Resiliency	% Participants
Bonding in Trials	100
Value of Chaos	100
Growth from Adversity	80
Deepening of Personal Relationships	80
Shift in Perspective	70
Benefit of Vulnerability	60
Expressing Gratitude	40
Finding New Personal Strength	40

Note. Thematic breakdown based on participant responses during the interview process.

Percentages based on themes determined by the researcher using IPA analysis methods to be most prevalent within the participants response. For analytic purposes responses were not sub-divided into secondary or tertiary themes.

Author Biography

Andrew Wilcox is a captain with the Salt Lake City Fire Department where he has served for over 12 years. In addition to serving as a firefighter and paramedic he is also the Peer Support Team Coordinator and oversees the health and wellness programs of the department. Currently he is in the department's Community Relations Division as an educator in partnership with the Salt Lake City School District to teach local high school students fire and EMT skills. Andrew has a Master's of Public Administration from Utah Valley University with an emphasis on suicide prevention among fire and EMS populations.

Dr. Rodger Broomé, Ph.D., is an associate professor of emergency services and public administration at Utah Valley University. He served as a Utah city police officer and firefighter/EMT for 22 years and as a reserve police officer for 13 more years after he retired from full-time service. His graduate studies were in existential-humanistic psychology with a clinical specialization. Dr. Broomé's research is on the phenomenological experiences of public safety officials' work. He has also published on public safety leadership and presented public safety perspectives in psychology, both clinical and theoretical.

Sleep Deprivation and Adverse Health in Firefighters

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Sleep Deprivation and Adverse Health in Firefighters
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Abstract

Circadian rhythm and the appropriate quantity and quality of sleep are essential for humans to

maintain homeostasis and proper health. Firefighters, who often work shifts of twenty-four

hours or greater, suffer significant sleeplessness when compared to the general population,

manifesting several health consequences as a result. The goal of this research was to evaluate

multiple studies through a systematic literature review process on firefighter sleep deprivation.

Through a meta-synthesis of these studies and articles, this document aimed to answer

questions of what sleep deprivation is, the issues associated with sleep deprivation,

contributing factors, and possible solutions to reducing risks, or at a minimum, mitigating these

risks. Prior research has indicated that sleep deprivation contributes to various health issues

including, but not limited, to myocardial infarction, heart disease, psychological illness,

metabolic dysfunctions, cancers, and increased vehicle crash incidents. The causes of sleep

deprivation are cited as long work hours, prohibition of resting at non-traditional times,

inability to acquire sufficient rest between shifts, and an exponential increase in the use of

emergency services when compared to years passed, among others. Several studies concluded

that implementing sleep training and fatigue education programs, restructuring work hours, the

appropriate use of caffeine and/or prescription aids, and strategic napping, to name a few, are

potential panaceas to reduce risks for those enduring chronic sleep deprivation.

Key Words: Circadian rhythm, circadian disruption, fatigue education, sleep deprivation,

shift work sleep disorder [SWD]

Introduction

Sleeplessness and chronic sleep deprivation for firefighters (and similar shift work emergency responders, e.g., EMTs, paramedics, law enforcement, and select hospital staff) is exponentially on the rise and comes with significant health and safety risks for both the responder(s) and the public. The sleep/wake cycle, further broken down into sleep/wake homeostasis and the circadian biological clock (together known as circadian rhythm) are essential for a human's baseline health and maintenance of homeostasis. There are exhaustive studies citing sleep deprivation, broken circadian rhythm, and sleeplessness as carrying elevated health consequences and safety risks. More simply put, the body needs rest to function properly and be free of health repercussions.

It is well documented that circadian disruption and sleep deprivation can lead to several issues that decrease the health and lifespan of an individual. Firefighters, who often work in shifts of twenty-four hours or greater, suffer substantially greater sleeplessness when compared to the general population because of the occupation and its demands. However, without proper recovery between shift work, or mandated interventions to mitigate these risks, firefighters will continue to suffer sleep deprivation related illness and injury without resolve. The sleep deprivation issue among firefighters has been tied to a myriad of health and safety consequences that include acute MI, cardiovascular disease, hypertension, mental illnesses (depression, anxiety, PTSD), diabetes, cancers, stress, job burnout, and reduced reaction time, among others (Bender, 2018). What's worse is shift work sleep disorder [SWD], a condition of chronic sleep loss/deprivation with symptoms lasting longer than three months, is becoming a recognized issue in 10-23% of rotating and night shift workers, both categories which

firefighters fit into (Kecklund & Axelsson, 2016). Additional dangers to the firefighter and the public due to sleep deprivation and associated disorders include reduced quality of patient care, increased incidences of vehicular crashes, and poorer decision-making process when fatigued (Barger et al., 2015). In fact, according to physicians at Johns Hopkins Medicine (n.d.), losing just one hour of sleep over a few days can have undesirable effects by leading to a decrease in performance, mood, and thinking. This highlights the disturbing fact that firefighters in busy settings lose far more than one hour of rest in a shift.

To understand why the issue of sleep deprivation and related issues are affecting the fire service at an alarmingly increasing rate, we must understand what the related health and safety issues are, what contributing factors are present that are exacerbating the consequences of sleep deprivation, and what potential preventative measures or resolutions exist. These are the problems this research aims to address. Further studies in all these categories are needed but are too broad for the scope of this paper.

The impetus of this research is to answer the following questions:

1) What are known issues and risks associated with sleep deprivation and circadian disruption?

2) What are known contributing and causal factors to the issue of sleep deprivation in the fire service?

3) What are some potential solutions and/or mitigations to sleep deprivation for firefighters?

As a note, sleep related issues correlated with the fire service profession are not limited to just sleep deprivation and/or circadian disruption. That is, several other sleep deficiencies

relating to this type of shift work can render the same risk factors and include several sleep

disorders such as chronic shift work sleep disorder [SWD], sleep restriction, circadian rhythm

misalignment, and sleep apnea, as examples (Kecklund & Axelsson, 2016). For this research, the

terms sleep deprivation and circadian disruption will serve to cover the broad range of sleep-

related issues amongst firefighters.

Literature Review

Firefighters face both danger and risk daily and on a global scale. At a moment's notice

and with little to no warning—other than the alarm tones set off to send them on their way—

firefighters respond to a countless myriad of emergency types to help others experiencing their

worst days and often life-or-death situations. As a result of the need for this twenty-four/seven

readiness infrastructure, the extended shift schedule was born and most commonly practiced

as twenty-four hours on and forty-eight hours off [24/48] rotation. At the onset of this

scheduling design, it made sense to have men and women in a state of readiness and able to

respond from the same property that housed all the tools of the trade (e.g., ambulances and

fire apparatus) during all hours of the twenty-four-hour day and not only during traditional

business hours. This was a highly functional scheduling solution in years past as emergencies

during sleeping hours were uncommon and infrequent, though they did occur. However, as

studies have documented, emergency services have experienced an alarming and relentless

rate of use by the public with many departments having difficulty keeping pace (and staffing) to

match the annually increasing call volumes in recent decades. What's worse, is with the

increased use of emergency services, calls for service are more commonly occurring at all hours

of the day with responders struggling to find ways to achieve any string of sleeping hours

needed for awareness, health, mood, and homeostasis. This added risk of sleeplessness is contributing to poor health and safety outcomes for both the firefighter and the public they serve.

All literature reviewed for this research—without exception—acknowledge that a problem exists regarding sleep deprivation in the fire service and the need to find remedies or mitigations for the associated risks. Most of the studies reviewed broached either associated health/safety issues with sleep deprivation, contributing (or general) factors giving rise to the sleep related disorders and maladies, or potential solutions or countermeasures to the sleep deprivation issues facing modern era firefighters. Some of the reviewed studies, including *Sleep Deprivation and the Health of Firefighters* (Bender, 2018), *Impacts of Shift Work on Sleep and Circadian Rhythms* (Boivin and Boudreau, 2014), and *Common Sleep Disorders Increase Risk of Motor Vehicle Crashes and Adverse Health Outcomes in Firefighters* (Barger et al., 2015) cover all the aforementioned areas of interest in their respective research while others exercise a narrower focus.

Impact on Health & Safety

The studies and articles utilized in this meta-synthesis unanimously agree, with data-supporting evidence, that sleep deprivation, chronic sleepiness, insomnia, sleep-related disorders (e.g., snoring, sleep apnea, and sleep walking), and circadian disruption are causal to significant health and safety threats to any human, while the exacerbation of these threats to firefighters who work extended duration shift hours are greatly increased. In their study, *Common Sleep Disorders Increase Risk of Motor Vehicle Crashes and Adverse Health Outcomes in Firefighters*, Barger et al. (2015) concluded in the results of their study that a total of 37.2%

of firefighters screened in their sample population were positive for any sleep disorder; 28.4% obstructive sleep apnea; insomnia 6%; shift work disorder 9.1%; and restless leg syndrome [RLS] 3.4%. The most comprehensive and lengthy study analyzed, *Perceived Effects of Sleepiness and Sleep Deprivation Among Firefighters and Emergency Medical Services Providers Working a 24/48 Shift Schedule* (Dees, 2009), used a one-way multivariate analysis of variance [MANOVA] test which revealed, among other findings, significantly lower physical health, higher levels of anxiety, and greater perceived pain levels than those unaffected by sleeplessness. Most studies reviewed were consistent in finding that the various sleep deprivation issues among firefighters had a high contributory rate to cardiac arrest (MI), cardiovascular disease, diabetes mellitus, poorer mental health presented as depression and/or anxiety, hypertension [HTN], and various cancers (and other metabolic syndromes). The latter, cancer(s) was/were the primary focus of two selected studies, *Health Consequences of Shift Work and Insufficient Sleep* (Kecklund & Axelsson, 2016) and *Shift Work and Cancer Risk* (Haus & Smolensky, 2013). In their study, which used a systematic review of published documents and literature, Kecklund & Axelsson (2016) cite a 2007 study by the International Agency for Research on Cancer [IARC] that found a strong link between night shift work, circadian disruption, and breast cancer. However, some of the literature they reviewed were conflicting, with four reports concluding a positive association and three considering not enough data has yet been provided. The studies also used a sample pool of extended-shift duration and night shift workers but not 24-hour shift workers. Haus & Smolensky's (2013) more recent study found more definitive connections between shift work and cancers. Their research recognized that over the span of ten years, multiple epidemiologic studies uncovered slight to moderate links with shift work and multiple forms of cancers

including breast, colon, endometrial, and prostate malignancies, as well as non-Hodgkin's

lymphomas.

Boivin and Boudreau (2014) expound on sleep deprivation risks in their study by

exposing the added health risks of poor morale, job burnout issues, and gastrointestinal [GI]

ailments and point to safety issues arising from sleep deprivation. The authors also point to an

added safety risk with sleep deprivation stating, "Chronic sleep restriction may deteriorate

individuals' performances" (p. 297), increasing the potential of improper decision making and

the incidence of motor vehicle crashes (both in responding to emergencies and returning home

after an extended hour shift). Barger et al. (2015) concurred with Boivin's and Boudreau's

findings regarding higher risk of motor vehicle crashes [MVCs] resulting from sleep deprivation

and additionally performed a structured interview process of over one hundred of the largest

U.S. fire departments (based on number of stations in the department) regarding MVCs

through an interview process. In the study, *Common Sleep Disorders Increase Risk of Motor*

Vehicle Crashes and Adverse Health Outcomes in Firefighters, Barger et al. found that an

astonishing 20% of serious injury resulting from response and return-to-home crashes were due

to driver sleepiness and fatigue (p. 233). It should be noted, however, that this figure is most

likely inaccurate and on the lower end of the spectrum due to the involved parties having

memory recall bias, or the inability to interview those that are deceased following an incident.

The authors also purport from their research that of the firefighters screened with the Berlin

Sleep Questionnaire [BSQ], 37.2% screened positively for one or more sleep disorders and of

those testing positive for sleep disorders, were found to be markedly more likely to report

involvement in an MVC.

An increasingly growing population of firefighters and first responders are reporting a

high level of job burnout and emotional exhaustion in recent decades. Researchers argue the

heightening phenomenon has measurable ties to sleep deprivation and associated disorders. A

comprehensive study, *Associations Between Sleep Disturbances, Mental Health Outcomes and*

Burnout in Firefighters, and the Mediating Role of Sleep During Overnight Work (Wolkow et al.,

2019), concentrated its investigation to the burnout and exhaustion phenomena and

firefighters directly. In this report, the authors found firefighters reporting short sleep during

24-hour shifts were more susceptible to a high degree of burnout. Even more concerning is the

investigatory study also found nearly half of the reporting sample population of firefighters

"exhibited high burnout on at least one dimension" (Wolkow et al., 2019, p. 11). Also using the

MBI survey, Peterson et al. (2019) discovered that their sample pool (law enforcement officers)

involved in long hours of shift work with inappropriate levels of rest and/or sleep recovery, had

a high incidence of burnout and emotional exhaustion. The findings included burnout

symptoms that yielded 42.6% with high depersonalization, 40.7% with low accomplishment,

and 23.8% with emotional exhaustion (Peterson et al., 2019, p. 10). Though the sample is

limited by including only police officers, the findings are transferable to those performing

longer shift work hours, including firefighters and other first responders.

Contributing Factors

Call volumes and the time of day associated with calls for service affect firefighter sleep

and/or recovery and have a direct correlation with sleep duration and quality for firefighters.

According to the National Fire Protection Association [NFPA] (2022a), in the last twenty years

(2001-2021), the American fire service has almost doubled in total reported call volume from

20,965,500 calls for service to 36,624,000 annually. The largest and most exaggerated increase

in calls for service is in the Emergency Medical Services [EMS] category where calls increased by

113.2% over the same twenty-year span with total volumes climbing from 12,331,000 to

26,291,000 annually (NFPA). Contributing to these statistics is how the fire service is used in the

modern era versus years past. A 2008 study performed by DeNavas-Walt, Proctor, & Smith

concluded that 15.3% of Americans are without healthcare insurance and are increasingly

making use of EMS (including 911 systems and hospital emergency rooms) as their primary

source of healthcare, contributing to the notable increases in call volumes, and often occurring

in the hours between 10:00PM and 7:00AM (Dees, 2009). The IAFC exposes concerning data

regarding the late night/early morning call increases by reporting the greatest number of

fireground and scene injuries occur between the hours of midnight and 6:00AM (Elliot & Kuehl,

2007).

It is widely accepted that calls at varying hours and periods of sleep deprivation are a

part of the fire service and emergency response occupations. What is not exposed publicly or

within current research is the numerical figures of the calls for service at late hours that are

unwarranted and unneeded. These calls, often called "nuisance calls" have not only increased

in the past decades, but have become a societal norm, further contributing to the health strains

of responders contributing to further sleeplessness. Administrators, media, and the public

themselves are resistant to using the terms "manipulate" or "misuse". Nonetheless, calls for

plumbing issues, non-emergent basement flooding, routine replacement of smoke/CO

detection batteries, and even the proverbial rescues of cats from trees, among many others,

are exactly these—manipulation and misuse—adding more hours of sleeplessness for those who are called to serve.

In this newer, modern climate, the extended duration shift is perhaps the largest contributing factor to sleep related problems. This is, of course, largely due to the nature of the business itself. That is, frequent interrupted sleep and recovery due to emergency responses and the corresponding irregular sleeping patterns leads to sleep deprivation (Billings, 2016) and SWD. A study focused on the topic of sleep quality in the fire service, *Firefighter Shift Schedules Affect Sleep Quality*, used the Pittsburg Sleep Quality Index [PSQI] to obtain both qualitative and quantitative data regarding sleep quality relating to busy shift work. In this study, Billings (2016) concluded that 59% of firefighters in major US cities and busier departments suffer from sleep deprivation, and 73% of respondent firefighters from the study's sample pool reported poor sleep quality in association with department duties. Billings further postulates that poor sleep quality for firefighters leads to increased health consequences and has a profound effect on the delivery of services in a department's respective community. A more recent study finds a much higher incidence of sleep loss for firefighters, indicating the survey used found a staggering 98.5% of firefighters are not meeting the minimum recommended amount of sleep while on duty (Bender, 2018). Bender's 2018 study further quantified sleep hours using the same sample group, finding that 6.25% had less than three hours of sleep on duty, 48.9% reported 3-4 hours, 43.38% 5-6 hours, and only 1.5% met the minimum recommended sleep hours (p. 26) as recognized by the World Health Organization [WHO] of 7-8 hours.

Boivin and Boudreau's 2014 study concurs and adds that, in addition to the actual duties performed, sleep and light exposure elements play a large role in sleep deprivation and

consequences. The same study cites that humans have a natural day and night light exposure rhythm that effects sleep and related health. Exposure to light during rest or sleeping hours suppresses melatonin, a hormone needed to regulate circadian rhythm. Firefighters are consistently experiencing interrupted sleep with the onset of loud and abrupt audible tones, immediate bright lighting, flashing emergency vehicle lighting, loud audible vehicle sirens, and blue light devices (such as computers and portable devices), among others during a needed rest cycle, further contributing to sleep deprivation. This was also posited in a study by Haus and Smolensky (2013), published in the *Sleep Medicine Reviews Journal* that expresses nighttime functions of shift workers involve a disruption of the natural sleep-wake cycle and circadian time organization with an unnatural exposure to artificial light. This becomes problematic as it has been recognized in a 2006 study, included in an International Association of Fire Chiefs [IAFC] report, that it can take as long as two hours to become wholly alert and oriented when aroused from sleep, despite an individual feeling that they are alert and ready to perform (Elliot & Kuehl, 2007).

Alarmingly, another environmental factor contributing to sleep deprivation and related issues are the people themselves. This is a broad grouping that includes department administrator expectations and reluctance to recognize or treat the issues confronting sleep and rest issues facing personnel, the respective jurisdiction's management expectations of the department and its administrators, the public's demands and expectations of the service, the fire service culture, and the actual firefighter perceptions and behaviors regarding sleep and/or recovery.

Expectations by departmental administrators, the public's demands and perception of the fire department, and fire department culture can perhaps be addressed simultaneously. The notion that firefighters are available 24/7 has, in recent years, been associated with the stigma of performing actual work for those 24 hours of duty. In fact, the public, in response to changing economies and fiscal restrictions, have increased expectations, and become growingly reliant on fire services (Dees, 2009). Managers and administrators have responded to these expectations by adding multiple responsibilities and tasks to the daily routines and schedules of firefighters including public education and outreach, fire prevention duties, maintenance tasks, and increased daily chores, adding to an already busy call volume environment (Dees, 2009). Dees (p. 76) quotes a portion of a personal communication with B. Crawford, Fire Chief, North Central Texas Council of Governments (2008), stating, "…they are working an equivalent of an eight-to-five job without the opportunity to rest and then often staying up all night responding to emergencies." Bender (2018) concurs in her study of sleep deprivation and firefighters, acknowledging that personnel are all too often kept busy during daytime hours with non-emergent and non-essential tasks without the ability during the day to compensate for disrupted and/or missed sleep. This lack of sleep catch-up or recovery time is exacerbated by many administrators' and supervisors' frowning upon the use of napping and rest, associating it with laziness and/or abusing time.

Firefighters are not without blame themselves, either. Multiple studies evaluate and/or mention the existence of secondary employment, familial responsibilities, and inappropriate use of recovery time as factors contributing to sleep deprivation. This is highlighted in a study titled, *Associations Between Sleep Disturbances, Mental Health Outcomes and Burnout in*

Firefighters, and the Mediating Role of Sleep During Overnight Work (Wolkow et al., 2019).

Using sixty-six American fire departments to take part in a sleep health and sleep disorder program, which included a Maslach Burnout Inventory [MBI] survey, did mention second employment sources as a factor in inappropriate sleep loss, however the study did not provide quantitative data. Dees (2009) committed a section of her study focused solely on secondary employment as a factor. Using a sample population of 2,050 firefighters and paramedics, the study reported that 32.6% to 42% of paramedics and firefighters, respectively, held secondary employment on their off days which included up to twenty-five hours of additional labor per month.

Age also plays a significant role in sleep deprivation and associated symptoms. Sleep is altered as one ages naturally, not inclusive of sleep disturbances and/or disorders (Dees, 2009). Once sleep deprivation and/or related disorders are overlapped with the natural aging process, sleep deprivation issues can be exacerbated. Dees (2009) reports in her research that according to the United States Fire Administration [USFA] that 46.3% of firefighters in the U.S. were over the age of forty. This figure has slightly increased in the years since with the NFPA (2022b) reporting 50% of firefighters across both career and volunteer departments fit in this category. It is further posited that adjustment to night work and extended shift durations reduces with time and age (Elliot et al., 2007). Oddly enough, while risk of health effects of sleep deprivation increases with age, Dees (2009) details that a smaller study found that younger people (21-23 years of age) performed significantly more poorly cognitively following 40-hours of continued wakefulness than their older counterparts. This was discovered by administering the

Psychomotor Vigilance Test [PVT] to the subjects of the study and found to be statistically

significant by the involved researchers (Dees, 2009).

It is also assumed that there is a clear line of demarcation between career versus

volunteer firefighters and sleep deprivation. That is, career firefighters are mandated to work

the extended duration 24/48 (or similar) shift work, whereas volunteers (to include part-time

personnel) are not. Barger et al. broach this in their study, *Common Sleep Disorders Increase

Risk of Motor Vehicle Crashes and Adverse Health Outcomes in Firefighters*, with "less than 1%

of the cohort identifying themselves as volunteer firefighters." (p. 235). This was only one of

two studies attempting to make the correlation between career and volunteer firefighters

regarding shift related sleep deprivation. However, one study, *Sleep Deprivation and the Health

of Firefighters* (Bender, 2018), did make the conscious note that a large portion of both

volunteers (to include part-time personnel) and career firefighters alike have the propensity to

carry the burden of other careers and/or side-jobs that affect proper sleep quality and potential

recovery periods. This obviously adds to the sleep deprivation issues for those that practice this

multiple-job scenario. Further studies should attempt to focus on this segment of the fire

service to establish a clearer picture of the effect on career versus volunteer responders in the

future.

Countermeasures

Nothing can replace sleep or the need for recovery following the loss of sleep. However,

there are potential countermeasures and mitigations that may lessen the health and safety

effects of sleep deprivation and its associated maladies. Four articles of research focused

specifically on countermeasures to the current sleep deprivation dilemma in the fire service.

Boivin and Boudreaux (2014) postulate that many shift workers display varying degrees of adaptation in circadian rhythm but lack complete adaptation with the absence of intentional and mandatory interventions in the workplace (p. 295). Their study, *Impacts of Shift Work on Sleep and Circadian Rhythms*, put forward countermeasures to the sleep deprivation crisis in the use of supplemental melatonin, strategic napping periods of 20-120 minutes (during 24-hour shifts), caffeination at 300mg in conjunction with planned 1–2-hour napping schedules, light therapies, and even hypnotics. The study did recognize, however, there were potential cons to the use of monochromatic blue light and possible links to cancer, inconclusive evidence of nap duration parameters, and the risk of sleep inertia—temporary disorientation and a possible decline in mood and/or performance experienced after waking from naps—as well as potential side effects associated with pharmacological aids. On the topic of napping, the IAFC (Elliot et al., 2007) agree that naps during a 24-hour shift of 20-120 minutes can be tremendously restorative for sleepy firefighters but also agree that sleep inertia could be problematic in some instances.

In their sleep disorder focused study, *Common Sleep Disorders Increase Risk of Motor Vehicle Crashes and Adverse Health Outcomes in Firefighters*, Barger et al. (2015) suggest that a workplace-based fatigue risk management program was a favorable mitigation to sleep deprivation outside of emergency responses. In addition, the authors assert that fire departments should establish and implement an entry-level and periodic medical evaluation with an inclusive sleep disorder screening element to identify those at risk for various known sleep disorders that affect shift workers to take a more proactive approach to limit sleep deprivation and avoid SWD. Barger et al. (2018), added to this ideal in their study, *Effect of*

Fatigue Training on Safety, Fatigue, and Sleep in Emergency Medical Services Personnel and Other Shift Workers: A Systematic Review and Meta-Analysis, suggesting that organized fatigue training "improved patient safety, personal safety, and ratings of acute fatigue and reduced stress and burnout" (p.58). The authors of this study further claim that results following the research showed improved sleep quality among their sample (Barger et al.). Their findings also indicate a 20% reduction in drowsy driving incidences, an 80% reduction in MVCs, and a significant reduction of injury claims of 24% status post fatigue training (p. 61). Elliot et al. (2007) concurs with the aforesaid and adds an element of familial education. That is, the IAFC report suggests educating firefighters' families on associated health risks, the need for rest, and signs to look for that can perhaps expedite firefighter sleep recovery in some instances. Dees (2009) also agrees with educational countermeasures, signaling that use of the Behavior-Based Safety System Model [BBS]. Her study proposes that BBS—a multi-step process used in management of occupational risk management and workplace injury reduction—can be used to effectively educate, administer, and promote proper firefighter sleep health behaviors.

Wolkow et al. (2019) echoes many of the same findings of other studied countermeasures to sleep deprivation for firefighters. What sets this study apart is the authors focus a portion of their research on how administrations can do their part in reducing sleep deprivation and the associated health and financial cost tied to it. The study hypothesizes that managers and administrators of fire departments need to investigate the effectiveness of occupational training and interventions that focus on the need and opportunities for sleep and rest. They further suggest that this need should encompass screening for and the treatment of

discovered sleepiness and sleep disorders to specifically reduce health risks and potentially reduce burnout.

Multiple studies make mention of the need for daily recovery and napping during shift hours for busy firefighters to offset circadian disruption and sleep deprivation where able. Few studies concede that administrators, supervisors, and often firefighters themselves stigmatize and/or punish those that attempt to nap when the rest is, in all actuality, both appropriate and needed. Wolkow et. al. (2019), in a very recent study, suggests that promotion of sleep and sleep health by departments lowers burnout risk with actions such as of encouraging sleep/naps, black out curtains, and private sleeping quarters. The authors also declare a need to adjust and/or modify the 24/48 schedule, however, with minimal elaboration. Two other selected studies cover modifying the extended duration shifts as well, yet one covers only 12-hour shifts for paramedics and the other inconclusive in its findings.

More immediate preventative or mitigating measures to sleep deprivation in fire department settings can be made, whether in conjunction with the above ideals or not. That is, daily etiologies that affect the sleep/wake cycle while on duty can mitigate the abrupt symptoms of rapid waking and interrupted sleep for those not needing to be awakened at all. These physical changes are recognized in three of the chosen studies in station/call alerting systems and lighting interventions. Sudden arousal, as what occurs when awakening to loud noises, is known to potentially cause cardiac arrhythmias in human beings. Despite this common knowledge, many departments still have loud volume alerting systems heard throughout buildings and, in many cases, in every department station, whether all personnel are required to respond or not. The same scenario applies to lighting when sudden artificial

light is turned on by alerting systems or persons exit sleeping quarters into lit hallways. Boivin &

Boudreau (2014) articulate that exposure to bright lights in evening hours delays and disrupts

circadian rhythms. The Federal Emergency Management Agency [FEMA] recognizes both

cardiac and sleep cycle issues with alerting, too. In their 254-page document regarding building

design, *Safety and Health Considerations for the Design of Fire and Emergency Medical Services

Stations* (2018), the authors state, "Sudden alarm activations, especially during sleep, cause

extreme stress on the heart. The repeated exposure to this type of awakening has a cumulative

effect that is detrimental to the cardiac and nervous system" (p. 97). In the same document,

FEMA (2018) also acknowledges the sudden alerting's stress and effects on firefighters' mental

functions and potential negative contributions to overall health. The alerting system effects are

FEMA's only mention of sleep deprivation issues in the entire document, giving clarity to the

need for government recognition and interventions of sleep deprivation in multiple areas.

Nonetheless, FEMA and multiple studies chosen for this exploratory study agree that alerting

technology must change to adapt to the busier workload environment and the now known

negative health effects. Recommendations from both FEMA (2018) and the IAFC (Elliot et al.,

2007) include ramping tones that start at lower decibel ranges and increase to a set level, softer

dispatching or pre-dispatch notifications over loud speakers, ramping lighting to start at darker

levels and progressively become brighter, lighting targeted to hall and pathways (rather than in

sleeping areas directly), use of red lighting over white and blue to allow for safer adjustment to

light when waking, video messaging to reduce audible noise, zoned alerting to signal only

stations being dispatched (rather than all department buildings simultaneously), and speakers

and lighting zoned to specific units and personnel housed with other units to alleviate unnecessary waking of unneeded staff.

Conclusion

As evidenced, all research on the topic of sleep deprivation in extended-duration shiftwork show strong correlations to problematic health issues including sudden cardiac arrest (the leading cause of death amongst firefighters), HTN, cardiovascular disease, diabetes, mental health concerns, and various cancers, among others. Firefighters that work 24-hour shift schedules (or similar extended-duration shifts) are more likely to experience sleep deprivation and circadian disruption issues than many other professions because of the modern social climate and use of emergency services during all hours of a day. Furthermore, contributing factors may not all be avoidable, but relevant research has clearly indicated that many preventable issues and behaviors exist regarding the associated risks of sleep deprivation and countermeasures can be put in place to preserve the health of those that regularly put their lives on the line for the public.

Methodology

As there is a very limited pool of research done on the topic at hand, this study was limited to answering the posed questions by performing a systematic review of relevant primary and secondary sources related to sleep deprivation, sleepiness, sleep disorders, etc. in firefighters. Resources used included mostly qualitative sources in the form of primary research documents. Using web-search criteria that included the terms sleep deprivation, sleep disorders, sleepiness, sleeplessness, and circadian disruption, plus the term firefighter, only six (6) relevant resources were found. The search was then expanded to include the terms

shiftwork, shiftwork disorder [SWD], and extended-duration shift, which revealed a total of five

(5) additional applicable research documents for review in this exploratory research. These

resources included scholarly articles, reputable journal entries, and peer-reviewed studies and

theses/dissertation research works. As such, the methodology used for this research is a meta-

synthesis of the selected documents. Meta-synthesis seeks to homogenize results from several

different related qualitative studies (Walsh, 2004) and interpret how the data relates to this

research. Upon completion of the thorough review of these documents, this method was

performed to document the findings as they relate to the three (3) posed research questions

this research sought to answer: What are known issues and risks associated with sleep

deprivation and circadian disruption?, What are known contributing and causal factors to the

issue of sleep deprivation in the fire service?, and, What are some potential solutions and/or

mitigations to sleep deprivation for firefighters?

Discussion

Two hundred years of tradition unimpeded by progress is an age-old adage proudly

vocalized by those in the fire service. But has the fire service not been impeded by progress? In

those two hundred plus years, firefighters have had an ever-expanding scope of practices

added to their skill sets. These include emergency medical response [EMS] to include

paramedicine, first responder duties to subsidize the EMS, hazardous materials [HAZMAT]

mitigation, public education, recruitment, and fire prevention, as examples. This progress has

seen tremendous shifts in the practices and services offered by fire departments on a global

scale. As years pass, fire departments seemingly keep adding to their list of service tasks, often

without a significant change in workforce numbers.

A paradigm is a typical pattern of something. In the case of the fire service, the pattern

is to constantly strive to satisfy the ever-changing and evolving demands of the public that fire

departments serve and the administrations that aim to satisfy those public pressures. In seeking

to satisfy the citizens and entities protected by fire departments, the safety infrastructure that

any respective department is designed to be is diluted with a multitude of laborious functions

that fall outside of the term "emergency" and have increased the calls-for-service exponentially

in recent decades. The late Chief Alan Brunacini of the Phoenix Fire Department (Arizona) is

often credited with applying the term "customer service" in relation to firefighting functions

offered to the public. His aim was to assure each call for service was a positive experience that

had a lasting beneficial impact on both the person needing aid and the firefighter(s) rendering

the assistance. While very well intentioned, surely, this push, over time, has further watered

down the emergency aspect of any given fire department and essentially creates a service

department rather than an emergency infrastructure. That is, rather than using 911 (or similar

emergency requestioning communication) for only emergencies and dire situations as the

service is intended for, the public at large, to include administrators, health care personnel

outside of EMS, etc., are increasingly using emergency services for non-emergent and service-

oriented tasks. These non-emergent and often trivial incidents add to firefighter personnel's

daily tasks and emergency call volumes twenty-four-seven-three-sixty-five. This trend is

evidenced by (NFPA, 2022a) data that documents that fire-related call volumes increased by

74.7% between the years of 2001 to 2021. The same data set reveals an even more severe

increase in EMS call volume for the same two-decade period as recorded at an astounding

113% in addition to the aforesaid fire-related calls. These increases are arguably the very

foundation of sleep loss and associated maladies in firefighters worldwide.

All studies reviewed in this research are unanimous in their respective conclusions

regarding a direct connection to firefighters working extended duration shifts and health issues

associated with sleep deprivation in the modern fire service. Sleep loss is compounded further

in those fire departments offering the added services of first response personnel, paramedics,

and EMS transportation. As previously noted, DeNavas-Walt, Proctor, & Smith (2008) posited

that 15.3% of Americans are increasingly utilizing 911-based EMS as their primary source of

healthcare, contributing to the notable and exponential increases in call volumes, often

occurring in later evening and early morning hours (Dees, 2009). The World Health Organization

[WHO], the Center for Disease Control [CDC] (ibid.), and the National Sleep Foundation (Billings

& Focht, 2016) have all established a healthy recommended nightly amount of sleep for proper

health to be between 7-9 hours to maintain health and homeostasis. This is, of course, not

possible for those working in busy 24-hour service call environments, such as career

firefighters, who experience intermittent, yet frequent, circadian disruption, sleep deprivation,

and chronic sleeplessness. While the very nature of the firefighting profession is to be ready for

an emergency twenty-four-seven, the current social climate and usage of emergency services

has drastically reduced assurances of proper rest and/or sleep for career firefighters in busy

environments.

Conclusive evidence puts forward that direct links to sleep deprivation to firefighters

and health concerns clearly exist. All included studies confirm associations of MI, other cardiac

diseases, depression and other psychological ailments, cancers, and deadly motor vehicle

accidents, among others. What should be noted by the previous sentence is the leading killers

of firefighters, globally, have been repeatedly reported as heart attacks (MI) and cardiovascular

diseases, cancers, motor vehicle accidents [MVA], and suicide year-after-year. One may

decipher definitive relationships—using the given research—the links to these age-old leading

causes of mortality in our first responders and the more currently recognized issues with sleep

deprivation in the fire service. Such recognition should nudge, if not give a hard push to a

movement for change within the fire service and to recognize the need for potential mitigations

for sleep loss in those that protect the public.

Of additional and perhaps more alarming concern is the role of SD and SWD with mood,

decision-making processes, and burnout (both emotional and physical), all of which carry

potential detrimental risks to the responder and all those surrounding them. Wolkow et al.

(2019) found that SD often poorly affects mood, impairs appropriate decision-making skills, and

increases burnout, which is defined as "A three-dimensional syndrome characterized by

emotional exhaustion, depersonalization, and a low personal accomplishment, which persists

after a typical period of recovery from work." (Wolkow et al., 2019). This goes beyond just

frowns and sour attitudes during calls for service and can have a dramatic impact on scene

outcomes if not remedied. Decision-making is conceivably the larger issue with SD, though,

with both on scene decisions regarding safety and driver/operator abilities to reach

destinations safely being the most critical. A 2015 study focused on poor decision-making and

MVAs divulged that sleep deprived firefighters in their research sample were markedly more

likely to report a vehicle crash and those reporting near crashes were also significantly elevated

(Barger et al, 2015). This is problematic, not only for those in the apparatus involved in an

accident, but those that the vehicle strikes, often incurring injury, or worse, death. Additional studies should be aimed at SD and the direct relation to MVA incidents due to their high morbidity rate affecting firefighters and the public.

With virtually all other extended-duration shift and transportation industry requiring appropriate rest and SD recovery, whether by policy or law, it is baffling why the fire service seems to lack the same mitigatory efforts. The International Maritime Organization [IMO] outlines measures and requirements to reduce fatigue and potential incidents in resolution A.772(18). In fact, the U.S. Department of Transportation [USDOT] sets work hour limitations aboard vessels and enforcement of such is controlled by the U.S. Coast Guard (Elliot & Kuehl, 2007). The Interstate Commerce Commission [ICC] establishes parameters for working/driving hours and required rest periods for truckers, as do the Federal Motor Carrier Safety Association [FMCA], and the USDOT. Finally, the National Transportation Safety Board [NTSB] and the Federal Aviation Administration [FAA] place strict parameters and policies for rest and SD countermeasures for pilots (Barger et al, 2015). Ironically, in a 2007 comprehensive report, the International Association of Fire Chiefs [IAFC] recognized the increasing need for sleep and cited these other organizations as successfully executing preventative programs. However, the cultural stigma of the fire service persists, and no rules are in place to protect firefighters or first responders.

Accordingly, a paradigm shift is desperately needed within the fire service and its often stubborn and machismo culture. More specifically, this shift in culture should be aimed at administrators and supervisors (or even a shift in public perception) and what is considered an appropriate amount of daily work in a modern extended-shift environment and the allowance

of proper rest during such shifts. That is, stigmatizing the need for rest regarding napping and/or the proper need for recovery or rest between incidents or shifts, let alone punishing those that attempt to rest, is only adding to the decay of health in responders. It should be noted that firefighters themselves also carry the burden of blame in many instances of sleep deprivation issues. This is not a pejorative statement, however, those that choose to participate in other demanding jobs/careers when not on shift, or those that do not use recovery time wisely, are also adding to the diminishment of proper homeostasis and poorer health. Billings and Focht (2016) point to this very issue citing that approximately 64% of their sample pool had additional careers while off duty (during needed rest phases) that adversely impacted recovery and sleep quality. Perhaps the largest fundamental change needed to curb the increasing sleep loss of firefighters, though, needs to occur with the public and end-users of fire services. More succinctly, those using 911 (or similar emergency requisitioning communication) need to be educated and held responsible for using fire department services in a proper fashion. Moreover, movements need to be focused on those calling for aid are not misusing or abusing the system for their benefit, even if occurring from simple ignorance. More studies should be aimed at this modern phenomenon of emergency system usage (or misusage) to gain a better understanding of just how often the system is used inappropriately, how to change this usage, and what the associated costs to the taxpayer amounts to with such use.

Beyond the outlined call volume and stigma issues lie more tangible and repairable items such as environmental factors that affect firefighter rest and circadian rhythms. These can include, but not be limited to station design, station retro fitting, policies, and dispatching procedures, only to name a few. Several studies have acknowledged startle-response and links

to MI when abruptly waking as happens with loud fire tones and immediate dispatching when emergencies occur during sleeping hours. FEMA posited in their 2018 *Safety and Health Considerations for the Design of Fire and Emergency Medical Services Stations* document that studies have shown the human heart rate acutely increases and doubles status post the sounding of an audible alarm while sleeping (2018). The document further clarifies that few, if any other occupation places such stress on the heart of a human with instant light and sound as in the fire profession (FEMA, 2018). Modifying alerting systems and dispatch practices can provide potential relief in this category of disruption and should be considered by all fire departments not doing so. Adjusting and/or modifying sleeping quarters to eliminate disruptive environments, such as snoring, alerting tones for other units, and external noise have been noted by FEMA (2018) as pertinent solutions to sleep health among firefighters in extended-duration shift settings when remodeling or building stations. And lighting, such as suddenly lit environments, bright white lighting upon waking, and blue screen device use after waking have been linked by researchers to circadian disruption and longer-term health effects that can be addressed by departments in a proactive fashion.

The use of caffeine and possible sleep aid prescriptions was touched upon in several studies. Nevertheless, these suggestions are subjective in nature, at best. That is, several factors must be considered when considering individual differences. Some firefighters consume caffeine in far higher quantities than the recommended daily allowance, thereby reducing therapeutic effects. Nonetheless, it was suggested in two studies that 300 mg of caffeine in conjunction with strategic napping did show a modicum of success (Boivin & Boudreau, 2014; Elliot & Kuehl, 2007,). This does not encompass, however, those with cardiac arrythmias that

are cautioned against caffeination and those with sensitivities or tolerances to caffeine. Additional supplemental remedies include various stimulates and/or sleep aids, which is contradictory to safety in many instances, such as sensitivity to the supplement, impaired reaction times, and impaired decision-making capabilities, making this an imperfect and plausibly invalid option. Furthermore, who incurs the costs of said supplementation, the firefighter, or the taxpayer?

As with seemingly everything in our modern society, everything is based on a financial bottom line, even at the cost—for a lack of better terms—of human health and life. Very limited amounts of information in the form of credible research were found to associate cost versus benefit analysis regarding SD and potential interventions. In fact, only one study did mention the impacts of workplace stressors and SD and relative costs. In this study, Wolkow et al. (2019) listed the costs of workplace psychological stressors, employee SD, and firefighter health and wellbeing is approximated at $120 billion annually. This includes known ailments and maladies as results of injury and SD-related illnesses but does not directly account for sick time use for those needing time off for SD recovery. So, it can be presumed the cost is much higher when including these additional costs to the taxpayer and US economy. However, many firefighters are reluctant to disclose why they are using accrued sick time, which could make any accurate dollar figure difficult to obtain. Nonetheless, it seems more than logical that putting forth appropriate countermeasures and preventative programs toward SD and associated illness would prove a sounder use of finances than is currently being practiced.

Limitations

This research has potential limitations. Primarily, a very limited pool of credible studies regarding SD, SWD, circadian disruption, and related afflictions affecting firefighters currently exists. This was evidenced by having to manipulate research criteria to identify studies that involved firefighters specifically, as well as allowing for studies that involved other professions that suffer from extended shift ailments to subsidize qualitative synthesis. Furthermore, the sparseness of quantitative studies exists on the topic. This is presumed to be a result of potential sample pool issues and/or the possible lack of accountability and potential biases of those answering screening questionnaires such as the Ellsworth Sleep Scale [ESS]. In addition, the limited amount of published research does identify potential gaps in literature, further solidifying the need for ongoing future study.

While many of the studies involving sleep deprivation that are non-specific to first responders can be correlated to firefighters and their respective schedules, it can be posited that further studies are needed on the topic of sleep deprivation in the fire service and health issues kindred to the issue. More credible and peer-reviewed research analogous to those included in this study should be performed to develop a more copious pool of findings regarding SD, SWD, and circadian disruption in firefighters and the exacerbation of poor health consequences. Specifically, more research—both qualitative and quantitative—should be aimed at the following topics: 1) Additional research on what specific health effects are confirmed and potentially tied to SD, 2) How secondary employment in addition to primary extended-duration shifts affects those firefighters that opt to work additional jobs versus those who do not, 3) Potential solutions to recovery problems for firefighters suffering from SD (such

as sleep education, napping, daily workload reduction, external environment modifications, caffeination, medications, etc.), 4) How sleep issues and daily routines are perceived by firefighters and administrative personnel in order to identify stigmas and potential road blocks to appropriate countermeasures, 5) How SD and on-duty sleepiness affects incidences of MVAs for firefighters operating vehicles during both emergent and non-emergent responses, and, perhaps most importantly, 6) An in-depth and revealing study on the use and misuse of the fire service emergency infrastructure by those that call, with an aim at exposing how the system is currently used and remedies for curbing increasing call volumes globally.

Recommendations

The evidence presented in this research is conclusive that firefighters working extended-duration shifts suffer greater health risks and higher morbidities and mortalities than the average person resultant from SD and related issues. This research has exposed a great need for mitigations and countermeasures to protect those firefighters suffering from SD, those potentially suffering from SD, and those that will become affected by the issues related to SD during their respective careers. As such, the recommendations of this research are to focus on six potential solutions and countermeasures to include cultural change at all levels of the fire service, sleep deprivation and recovery education and training, on-duty, and off-duty interventions, building or environmental factor improvements, call volume reduction, and governmental involvement via regulatory policy.

Culture Shift

The need for fundamental change and a shift from traditional practices is notably discernable in the fire service. However, change has often, if not always, proved difficult in a

profession mired in both stigma, machismo, and political gamesmanship. These are significant factors at all levels from administrators, to firefighters, to unions (for those that have unionization). Research in the modern era has tied significant health risks, illnesses, and financial costs to the lack of appropriate sleep; and the fire service, specifically, lags behind virtually all other professions such as aviation, transportation, and maritime, among others, in exercising mitigation and/or prevention. Recognition of the need for a paradigm shift within the fire service community is desperately needed and it is recommended this change be started immediately. Changes should be aimed at education, allowance of recovery and napping by disposing of traditional thinking, and, of course, may also include a potential adjustment in shift schedule from twenty-four-hour shifts to twelve-hour shifts, if possible, as examples. As with any major change, though, this should be performed incrementally and needs to have full buy-in from administrations, unions, and the firefighters themselves.

Fatigue Education

A second recommendation of this research is to implement appropriate fatigue training for the fire service. As suggested in a previous study, focuses of the education programs can include basic education of SD, SWD, and circadian disruption, the causal factors, and the use of countermeasures to sleepiness (Barger et al., 2018). It is further recommended that baseline employee screening for SD, SWD, and possible sleep disorders be performed in conjunction with fatigue training. This educational program proposal should not be limited to solely fire department employees, but offered to jurisdictional managers, and firefighter families as well. Education often proves to be the initial and most beneficial step in any proposed mitigation or countermeasure.

On and Off-Duty Interventions

A more immediate intervention for those affected by SD because of busy department atmospheres is to adjust daily routines and workloads. That is, in many cases, firefighters perform a myriad of daily duties and non-emergent functions despite being busy or fatigued. Often this is spawned out of the need for optics regarding firefighters working for their pay and not merely dawdling at the expense of the taxpayer. This is an antiquated and inaccurate perception and by crowding the already busy routine with additional and, at times, frivolous workload tasks, is only compounding the issue. Simple allowances for strategic naps, and recovery in dark, quiet areas, regardless of time of day, is highly recommended. This is just as important, if not more so than physical fitness requirements in many instances. This comes at no cost at all to the public or department and serves to better both health and states of readiness for real emergency operations.

An additional recommendation in this category pertains to off-duty activities. Specifically, it has been found that firefighters having secondary employment when off-duty are more prone to SD, SWD, and circadian misalignments, as well as inadequate recovery when compared to those without outside employment. Departments may be unable to disallow outside employment to be held by firefighters, but restricting hours of additional work in the hours preceding or following a shift is highly encouraged. That is, especially in the case of those working at other fire departments as side work, administrations should limit and or prohibit members from working for at least twelve hours prior to and following a twenty-four-hour shift. Doing so reduces the potential of firefighters from coming into work already fatigued and to

return home to obtain proper recovery. This suggestion, of course, cannot pertain to outside familial obligations that do, at times, pose additional stressors and inability to recover.

Environmental Interventions

Perhaps the simplest of countermeasures to reducing a sleepless environment when not actively participating in response scenarios is by altering or constructing the sleeping environment of the fire station where responders are housed and sleep. The recommendation of this study is to not ignore those recommendations of FEMA and the NFPA regarding station construction and sleeping conditions. Barger et al. (2018), FEMA (2018), and the IAFC (2007) all recognize the need for reducing startle effect—a significant contributor to sudden cardiac arrest and cardiovascular syndromes—that is present in a large number of fire stations across the U.S. This can be mitigated by putting in place escalating alert tones (that start quietly and progress to higher decibels) to gradually wake a responder, alerting only those personnel being called to a scene (rather than all stations or all apparatus personnel within a station), and altering dispatcher practices to speak in softer voices in later hours.

Further recommendations in this category include providing individual sleeping quarters, sound reducing "snore wall" technology, and sleeping areas separated by apparatus/crew type to alleviate others being awakened without the need to be. Additionally, bright lighting was cited as a contributor to health issues during night events. Dimmer night lighting that illuminates only when tones are activated, reduced amount of lighting (such as providing egress or minimal hall lighting), and the use of red lighting and blue screen filters may potentially alleviate some of the issues with nighttime calls for service.

Jurisdictions and administrators are recommended to avoid hiding behind financial strains when evaluating the above suggestions. The costs of such improvements do not outweigh the costs of sick time use, health insurance costs, and overtime compensation, but, in fact, should prove less costly and more beneficial. Not only should administrators be charged with the health and safety of their respective employees but should also advocate proactively for the health and wellbeing of their firefighters.

Call Volume Reduction

The most complex and perceivably most difficult of recommendations is to actively attempt reducing unnecessary call volumes in any given jurisdiction, let alone on a national or global scale. Nonetheless, this recommendation does need to be put into place before a collapse of the emergency response system occurs. The fire service is already experiencing a dramatic decline in interested applicants, non-emergent and malicious calls are on the rise, sick time use is exponentially increasing, and the links to poorer health with SD have been well established. It is recommended that departments partake in actionable research to aid in creating solutions to emergency service usage in their respective areas.

It is recommended that departments actively participate in public education programs for the public, health care facilities, city administrators, and private practices that establish what proper use of services are and what they are not. This proactive approach, using run reviews or scenarios, should prove to have a profound impact on improper usage by simply educating those that don't understand what is appropriate and what isn't is imperative. Moreover, departments should fine and/or criminally charge those that maliciously use 911 (or

similar emergency requestioning communication) for inappropriate and egocentric reasons beyond the need for emergent help.

Policies and Laws

Dramatic changes can be made in any industry or environment when policies and/or laws are put in place to regulate poor performances and/or unsafe practices. There is no line of demarcation in the fire service that should shelter employers from these laws, either. However, outside of Occupational Safety and Health Administration laws that not all states are required to follow, the fire service is without regulatory guidance and oversight pertaining to SD, SDW, and circadian disruption prevention or mitigation.

This research proposes that local governmental policies should put in place an impetus for administrators to allow and provide for proper rest and SD avoidance, as well as guidelines—in the form of departmental policy—that firefighters must follow to achieve the same goals. It is highly recommended that each state, if not the federal government, enact laws to govern the safest practices for extended-duration shiftwork firefighters in relation to proper rest while on duty. Doing so will improve the health and safety of both the responders and those that they serve. Many other sectors have enacted such laws, however, there is a perceptible and unwarranted reluctance to provide the same oversight for fire department operations and their respective personnel in the U.S.

<div align="center">

Conclusion

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The three goals of firefighting are to protect life, to reduce injury, and to conserve property when called upon. Firefighters are often requested for reasons beyond the three goals of firefighting and at a markedly increasing rate. What's worse, because of the increasing use of

emergency services, firefighters are now seeing the greatest reduction in sleep quality between the hours of 1:00 AM and 5:00 AM (Elliot & Kuehl, 2007), creating an exacerbated occurrence of SD in firefighters than in decades past. More than just coincidentally, the highest incidence of fireground and response injuries occur between the night hours of 12:00 AM and 6:00 AM (Elliot & Kuehl, 2007) furthering the connection between sleepiness, health, and safety.

Inherent to the job or not, there are several steps that can be taken to limit the effects of SD and protect the health of responders. Executing efforts to enable current fire service culture change, providing sleep deprivation and recovery education and training, setting forth on-duty and off duty interventions and policies regarding secondary employment, improving building and/or environmental factors, curtailing the inappropriate usage of emergency services in an effort to reduce call volume, and providing government regulation which all potentially contribute to a safer environment, and ultimately providing for better health outcomes for the men and women that protect and serve communities around the globe.

In following the recommendations of this research, personnel and their respective departments will likely see a reduction in SD related medical concerns, improved recovery, boosted job performance during shift work, reduced use of sick time and injury claims, and ultimately provide for greater fiscal savings to departments and the public over time. By not recognizing the affects SD is having on firefighters and ignoring the recommendations for change is not only unhealthy, but unsafe and irresponsible. Afterall, shouldn't the same three goals of the fire service also pertain to the firefighters themselves?

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Factors Affecting Volunteer Firefighters' Work, Family, and Volunteer Balance to Serve

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Abstract

The volunteer fire service in the United States is experiencing a decline, presenting the opportunity to study factors affecting current and former volunteer firefighters' ability to serve. A qualitative case study of volunteer fire service organizations in southern New Jersey and eastern Pennsylvania was undertaken to understand this phenomenon through semi-structured interviews with 13 volunteer fire service members. The findings of this study reveal that volunteer firefighters balance their time commitments through prioritization and self-regulation. The results also indicate that volunteer firefighters are uncertain whether their communities understand the fire service delivery model serving their communities, the potential challenges the volunteer fire service organization faces, or how this may impact the community financially. The discussion advances that recruitment and retention efforts should focus on the return on involvement and the level of involvement of volunteer firefighters throughout their fire service lifecycle. Additionally, recruitment and retention efforts should be directed at the community more determinedly.

Key Words: firefighters, volunteering, motivation, time-management, decision-making

Introduction

There are wicked problems, and the declining number of volunteer firefighters across the United States is a wicked problem (Grint, 2005; Rittel & Webber, 1973). A single community or volunteer fire service organization within a single municipality is not immune to the decline. This problem crosses permeable borders across jurisdictional boundaries and requires expanding beyond long-standing mutual-aid agreements between volunteer fire service organizations (Emerson et al., 2012; Emerson & Nabatchi, 2015; Newland, 2015). As membership in the volunteer fire service decreases, elected and appointed officials at all levels of government and fire service leaders will need to provide appropriate and responsive fire services while balancing costs. This predicament should come as no surprise. Multiple publications and numerous reports over time have identified the decline of volunteer firefighters (Center for Public Safety Excellence [CPSE]/ International City/County Management Association [ICMA], 2020; Evarts & Stein, 2020; National Volunteer Fire Council [NVFC], 2015,2020; United States Fire Administration [USFA], 2007; Senate of Pennsylvania, 2004, 2018). Recommendations in these reports remain unfulfilled, yet the issues are now more severe, complex, and extensive.

The National Fire Protection Association (NFPA) established the United States Fire Department Profile report in 1983, collecting data from fire departments nationwide (Evarts & Stein, 2020). The last reported data in 2020, for 2018, recorded the lowest levels of volunteer firefighters since the survey began. At the same time, a Senate Report in the Commonwealth of Pennsylvania reported a decline over the past 40 years of nearly 262,000 volunteer firefighters from 300,000 to 38,000, thus declaring fire to be in crisis (Senate, 2018).

Scarce public resources and expanding requirements put increasing pressure on volunteer fire service organizations. Creating sustainable fire service delivery will rely partly on the public sector's ability to make them more efficient and deliver more for less. With a decline in volunteers, this is a dilemma.

This decline is due to time demands and changes in the dynamics of the family and work schedules, reducing the time to serve as a volunteer. However, volunteer firefighters find ways to serve their communities. Individuals continue operating in the volunteer fire service in the face of consistent challenges, jeopardizing their physical, emotional, and financial well-being on behalf of strangers.

Volunteer firefighters comprise 67% of the firefighters serving in the United States (NFPA, 2020). Communities served by volunteer fire service organizations (VFSOs) and combination fire service organizations (CFSOs) depend on them for various emergencies. The reliance on the volunteer firefighter should not, and cannot, be taken for granted. This valuable human resource amount of donated time saves local communities an estimated $46.9 billion annually (NFPA, 2017). No national average of a volunteer firefighter's time in their community exists. Still, the time demand includes responding to emergencies, training, fundraising, apparatus, equipment maintenance, station maintenance, and administrative activities.

The strain on fire service organizations to recruit and retain enough volunteers to provide services will continue. With the mission of providing services to more than 70% of communities throughout the United States (Rielage, 2021), volunteer recruitment and retention is becoming a national problem.

The future of the volunteer fire service will rest upon individuals serving in VFSOs, individuals who lead VFSOs, elected and appointed officials, and the communities that depend on VFSOs. Communities relying on volunteer fire services and hoping to continue receiving cost-saving fire services in the future must also be willing to address the issues impacting recruitment and retention that negatively affect the service today. Ignoring these issues will lead to what Watkins and Bazerman (2003) call "predictable surprises," those events or outcomes that catch us by surprise, yet both were predictable and preventable (CPSE/ICMA, 2020). If the decline of volunteer firefighters continues, elected and appointed leaders and their communities will be confronted with difficult choices about how to provide the fire services needed and the level of services to be provided. By understanding what factors affect volunteer firefighters' work, family, and volunteer balance to serve now, the sustainability of the volunteer fire service can be addressed.

Literature Review

The primary purpose of this literature review was to understand influences and motivations affecting volunteer firefighters' work, family, and volunteer balance and how individuals decide between them, ensuring they meet their minimum obligations to the VFSO they serve. This literature review examined issues and concepts in volunteering, volunteerism, motivation, and public service ethos. Understanding why an individual volunteers in public service drives recruitment. In addition, the literature review examined a secondary framework of time management, role conflict, and volunteer lifecycle for an individual to remain in the volunteer fire service. Through an interpretive methodological position, the understanding of the meaning-making practices of human actors, such as volunteer firefighters in the field in the

recruitment process, may be understood. Individuals who serve as firefighters and their lived

experiences are a source of evidence of what it means to be a volunteer (Klosk-Gazzle, 2016;

Yarnel et al., 2004).

Volunteering has a long-established history in the United States, dating back to the

country's origins (Smith, 1978). The volunteer fire service is one of the highest-profile volunteer

responsibilities in the country (Cravens, 2015). Several scholars have studied volunteer

firefighters in the last four decades (Baxter-Tomkins & Wallace, 2009; Cowlishaw et al., 2008,

2010; Dawson et al., 2015; Perkins, 1989, 1990; Perkins & Metz, 1988; Thompson & Bono,

1993). These studies coincide with a decline in volunteer firefighters. Some scholars have

looked at individual motives to volunteer in the fire service (Clary et al., 1996, 1998; Haski-

Leventhal & McLeigh, 2009; McLennan et al., 2004; McLennan & Birch, 2005; Schmidthuber &

Hilgers, 2019; Thompson & Bono, 1993). Others have focused on recruitment and retention

efforts (Aitken, 1999; Henderson & Sowa, 2017; Jones, 2015; Lantz & Runefors, 2021;

McDonald, 2016; McClennan, 2004; McLennan et al., 2009; Yoon et al., 2014). However,

volunteer engagement and the environment of volunteer firefighting studies are limited,

indicating a gap needing attention (Cravens, 2015; McDonald, 2016).

Declining volunteerism in the fire service is not exclusive to the United States. Several

scholars have studied this phenomenon in Australia (Baxter-Tomkins & Wallace, 2009;

Cowlishaw et al., 2008, 2010; Dawson et al., 2015; McClennan, 2004; McLennan et al., 2009;

O'Halloran & Davies, 2020), Finland (Malinen et al., 2020; Malinen & Mankkinen, 2018) and

Sweden (Lantz & Runefors, 2021). O'Halloran & Davies (2020) highlight that rural Australia faces

volunteer attraction and retention issues. Notably, while many communities face volunteer

shortages, the magnitude of this shortage is not the same in all communities (O'Halloran & Davies, 2020, p. 423).

Previous research has focused on the demographics of those who volunteer, individual and organizational profiles of volunteers in the fire service, and those responsible for attending to these issues, volunteer fire chiefs (Colibab et al., 2021; Yoon et al., 2014). Some of these studies utilized surveys to extract data, while others conducted qualitative interviews. The findings of these studies have contributed to the growing literature on the volunteer fire service but miss the opportunity to look at this issue from the lens of those more responsible than those who lead them, as noted by Yoon et al. (2014) and Lantz & Runefors (2021), the individual volunteer firefighter.

That is not to say that volunteer fire leaders cannot address this issue. Still, leaders at times mute, unintentionally, and intentionally, those who provide the most significant contribution to conducting the organization's mission, the volunteer firefighter. For some VFSOs, the decline of volunteers impacts the organization's ability to perform that mission efficiently and effectively.

Volunteer fire service organizations have traditionally been the locus for community organization and solidarity (Thompson & Bono, 1993, p. 324). However, Holmes et al. (2019) call attention to a general lack of awareness in the broader community about the reliance on volunteers for firefighting. Therefore, it makes sense that viable solutions remain local. Perspectives and collaboration from various community sources, including fire service leaders, elected and appointed officials, business and civic organizations, and the community at large, with support from other levels of government and organizations positioned to assist, will be

essential. Before getting to that point, understanding factors influencing individuals to give their time freely to their communities and how they balance their lives to serve their neighbors is necessary.

The starting point is volunteerism, motivation, and public service ethos to serve (i.e., recruitment). Once an individual joins, the shift is to retention. While VFSOs consider retention strategies, the focus should consider balancing time (i.e., time management, decision-making, and prioritization) and the role of conflict during the volunteer life cycle.

Volunteerism in the Fire Service

Volunteerism, in general, has been a long tradition in the United States, as noted by Alexis de Tocqueville's writings in the 1830s (Smith, 1999). However, despite widespread interest in volunteering, few empirical studies have evaluated the impacts of volunteering (McPherson, 1981; Smith, 1999). McPherson (1981) echoed this, finding longitudinal evidence on voluntary affiliation focuses on organizational histories rather than individual behavior (p. 706). These findings are consistent with the decline of volunteer firefighters serving one of the oldest volunteer organizations in the United States. The fire service in the United States has relied on volunteerism since the early 18th century, long before independence. Volunteer firefighters contribute nearly $49.9 billion per year of donated time to the total cost of fire in the United States, an estimated $140 billion per year (Hall, 2014; NVFC, 2020). The cost to communities throughout the country will increase should it be necessary to establish a CFSO or PFSO to supplement the decline in current volunteers if the volunteers become nonexistent, as donated time will shift to actual dollars.

The literature on volunteerism is abundant. Existing scholarly journal articles, periodicals, textbooks, reports, and internet articles provided a broad review. The available research on volunteer firefighting has focused on organizational fire department data supplied by the fire departments and demographic information provided through quantitative research surveys and secondary sources such as professional periodicals and internet resources. In addition, official reports, such as the U.S. Fire Department Profile 2018 (Evarts & Stein, 2020), Pennsylvania Senate 60 Report (2004), and Senate 6 Report (2018), address the decline in volunteer firefighters. These reports also focus on their impacts on response, including but not limited to why individuals no longer volunteer due to changes in demographics, training requirements, and two-income households. Nevertheless, though the numbers are declining, individuals continue to join VFSOs. Given time demands and changes in the dynamics of the family and work schedules and their ability to serve their communities, it is essential to understand why these individuals volunteer.

Concepts and theoretical contexts vary across the literature, but several themes are evident. Individuals volunteer in not-for-profit organizations, including government, community-based, and for-profit organizations. These organizations may use volunteer resources in short-term, long-term, conservation, recruitment and placement, and emergency and relief programs. According to Putnam (2000), giving time and money is a long and distinguished tradition in American society. Active volunteer firefighters are involved in firefighting, training, and other ancillary activities, including any active part-time (paid or volunteer) firefighters (Evarts & Stein, 2020. p. 1). Of the total number of firefighters, 370,000

(33 percent) were career, while 745,000 (67 percent) were volunteers (Evarts & Stein, 2020; NVFC, 2020).

Volunteerism in the fire service requires sacrifice, time, and effort but includes the potential risk of injury or death (Simpson, 1996). Other than emergency calls, most other volunteer functions, such as training and meetings, are routine. However, the standards and requirements for a certified firefighter have increased. While these standards and conditions may be prudent at the initial introduction level, the continued expansion of requirements may have unintended consequences.

Several studies focused on the decline of volunteer firefighters in rural areas of Australia (Baxter-Tomkins & Wallace, 2009; Cowlishaw et al., 2008, 2010; Dawson et al., 2015; McClennan, 2004; McLennan et al., 2009; O'Halloran & Davies, 2020). One potential contributing factor is the role family issues play in the resignation of volunteers (Cowlishaw et al., 2008; Simpson, 1996). However, Simpson (1996) argues that the new middle class rejects participation in VFSOs. They introduce the Work-Life Conflict model, which suggests that time- and strain-based pressures may be important sources for balancing volunteers and family (Simpson, 1996, p. 17). The effort concludes that VFSOs must develop policies that support volunteer families better.

The decline in volunteers is complex and includes work, an aging population, and population drift (Cowlishaw et al., 2008; Henderson & Sowa, 2018; Meijs & Ten Hoorn, 2008). By extension, family obligations may also be a contributing factor that results in community members from volunteering. In addition, municipalities are exploiting volunteers who provide

less costly fire protection services than paid departments (Simpson, 1996). However, innovative systems in emergency services can attract new middle-class volunteers (Simpson, 1996).

Individuals are motivated to join the fire service family for different reasons. Many are legacy members following a dad or mom; for others, it is about giving back to the community. Cowlishaw et al. (2008) and Simpson (1996) part ways here. Beyond the individual volunteer firefighter's family, the firehouse becomes the broader community by extension specifically. Simpson (1996) states the firehouse recognizes all life cycle phases of members and families (p. 22); however, Cowlishaw (2008) states that fire service agencies have little evidence to inform strategies for supporting the families of their volunteers (p.17).

Smith (1994) considered the determinants of participation in volunteer associations. He believes volunteer participation impacts the participant and the larger society (p. 243). These determinants consider factors that characterize an individual's environment and its impact on volunteer participation and the effect of regional and organizational influences, including the individual's social background, social role characteristics, and personality traits (enduring, trans-situational, general response dispositions of an individual). Such factors have significant potential as part of the explanation for volunteer participation. Other factors include attitudinal affecting volunteer participation, situational considering the individual's immediate situation, and social participation, dealing with how an individual participates in such social activities as friendship, politics, associations, church, neighboring, outdoor recreation, and mass media activity (Smith, 1994).

The subfield of inquiry reviewed here seeks to understand why people participate in volunteer programs and voluntary associations (Smith, 1994, p. 244). Smith (1994) examined

social background variables that identify volunteer participation involving an individual giving time without coercion or remuneration (p. 244). Furthermore, volunteer work is generally a public benefit activity, while participation in the association is either a public or member benefit activity (Smith, 1993). However, the values distinguishing one person from others beyond member benefit were considered, especially in service to others.

Public Service Ethos

Public service is enormously consequential and is a critical pillar of a functioning democracy (Perry, 2021, p. xv), requiring a voice at all levels of government. Public Service Motivation (PSM) originates from beliefs that unique motives found among public servants are different from those of their private sector counterparts (Perry et al., 2010, p. 681). Perry et al. (2010) define PSM as "an individual's predisposition to motives grounded primarily or uniquely in public institutions and organization (p. 368)." Perry (2021) speaks to an attraction to public service and commitment to values. Booth-Smith and Leigh (2016) support the idea that a public service ethos is central to all public services.

What motivates someone to volunteer their time and specifically to a public organization? First, there is a lack of trust in the government (Kettl, 2021). Still, the volunteer fire service organization is viewed outside of that context, as many VFSOs are independent of the local governments in their communities. Second, VFSOs have long been a social fabric within a community and have enjoyed a positive reputation. Third, research in PSM focuses on motives and actions in the public sector intended to serve the community and the well-being of society (Christensen & Wright, 2011; Moynihan & Pandey, 2007; Perry et al., 2010; Perry & Wise, 1990). Finally, millennials have demonstrated high levels of volunteer motivation;

however, that does not translate to the fire service, although people are more likely to volunteer if they think they can make a difference (Brown, 1999; Rose, 2013). Volunteer firefighters emerge from this brief sketch as highly qualified and committed individuals whose substantial collective effort provides vital and deeply valued services to their communities.

Moynihan and Pandey (2007) argued that work-related rules and norms are organizational institutions that shape public servants' organizational behavior and the fundamental attitudes these actors hold about the value of public service. In this context, Moynihan and Pandey (2007) are building off of Perry's theory (2021) from the individual to the organization that PSM theory does not only motivate individuals but that public organizations, such as VFSOs, are social institutions that individuals interact and influence in the context of a structured environment. Perry presented such an instrument and defined PSM as "an individual's" predisposition to respond to motives grounded primarily or uniquely in public institutions" (Perry, 1996, p. 5). This predisposition led to Perry's (1996) development of six dimensions: attraction to public policymaking, commitment to the public interest, social justice, civic duty, compassion, and self-sacrifice. Perry's scale measures rational, norm-based, and affective motives (Naff and Crum, 1999).

The public sector's approach to the public service ethos should be less focused on 'defending' it and more about communicating what it means in practice, to the public, and what drives specific individuals to seek public sector employment (Booth-Smith & Leigh, 2016, p. 22). Leigh (2016) pointed out that younger public servants (aged 26-40) appear less committed to public service values than seasoned older peers. These include accountability, customer service,

and integrity. The younger generation values career advancement, creativity, pay, and benefits more aligned with the private sector.

Leigh (2016) defined the public service ethos as a set of principles or values that all public servants adhere to when performing their duties. The fundamental attributes of public service ethos most consistently identified in the public sector include accountability, community responsibility, customer service, and integrity. These are closely like those core values identified nearly a century ago—the idea of public service ethos, summarized by personal motivation (Booth-Smith & Leigh, 2016).

The idea of a public service ethos suggests a subtle trace of volunteerism. While modern public sector workers are not volunteers, some of the earliest versions of what we would recognize as public services and welfare were voluntary. Booth-Smith and Leigh (2016) believed there is value in public service ethos; however, it must reflect the generational changes of today's world, differences in public service organizations, and the emerging role of place. Younger workers have a weaker attachment to the traditional elements of public service ethos: pay and career override volunteering to one's community. Public service organizations must focus on public service ethos connected to the place of the local community (Booth-Smith & Leigh, 2016). What motivates these volunteers to freely bestow their productive energies in this manner is the topic of the following section (Thompson III & Bono, 1993, p. 325).

Motivation

Research is extensive on why people choose to engage in volunteer activities. Volunteer effort is significant because of its impacts on and benefits communities, society, and individuals (Oostlander, 2014). Volunteers will likely remain motivated and continue their volunteer service

by addressing their concerns (Clary et al., 1998). Therefore, understanding volunteer motivations by organizations that depend on this gratis labor is vital for recruitment and retention. Clary et al. (1998) examined a functional approach to volunteers and highlighted individual differences in motivation. Oostlander's (2014) study of volunteers similarly examined the unique differences between volunteers from the perspective of autonomy and control. Using Social Determination Theory (SDT) through survey questionnaires of nearly 2,000 volunteers, a positive correlation between autonomy and less control positively impacted volunteering. Haivas et al. (2012) also considered self-determination theory (SDT) and how individuals satisfy three basic psychological needs: autonomy, competence, and relatedness.

Functional theorizing looks at one's attitudes, social relationships, and personality in social psychology. Clary et al. (1998) identified six motivational functions of volunteerism: values, understanding, social, career, protective, and enhancement. It simply may be that volunteers value altruism and are rewarded by the fundamental act of volunteering (Bussell & Forbes, 2001). Shye (2010) proposed that instead of asking what motivates a volunteer, ask to what extent volunteering rewards the individual with several benefits. Whether it is an individual's belief system, attitude, or receipt of subsidy, understanding what motivates a volunteer firefighter to manage their daily lifestyle to service may be critical in balancing their everyday activities. In any context, the notion that someone would make a personal sacrifice for another individual, especially when the other individual is a stranger, is an exciting phenomenon and a motivating factor (Clary et al., 1998).

Giving oneself in the form of service is a critical motivation factor. Benefits and pride, also known as hygiene and motivation, are two factors that produce a motivated volunteer

(Herzberg, 1964; Smeby, 2022). This combined factor, also known as the two-factor theory or Herzberg's Motivation-Hygiene Theory developed by Frederick Herzberg (1964), offers that one set of factors causes satisfaction, and a separate set causes dissatisfaction. Some satisfaction examples from Herzberg's Motivation-Hygiene theory include a fair salary and compensation package, work hours, health/medical, pensions, and length of service awards (LOSAP) for volunteers (Herzberg, 1964). In addition, motivational factors include modern and well-maintained equipment (i.e., apparatus and personal protective equipment), appropriate certifications and qualifications, and a demanding training program. Pride is a factor that benefits the individual, especially considering volunteers serve without pay or remuneration if adequately motivated (Smeby, 2022). When these factors are applied to the organization, motivator and hygiene factors are improved and sustained. This can be done by providing direct feedback and supporting professional development within the organization. Support and attention can also keep employees from feeling dissatisfied, leading to volunteer firefighters not being retained.

Dissatisfaction may include time requirements to train an individual as a volunteer firefighter, meetings attendance, and other related fire service activities. Over time, the hours available to commit to organizations have been reduced. Demands have increased personally and professionally, and societal values have impacted the volunteer fire service (Smeby, 2022). Collectively, the more demands on the individual's time act as a disincentive. Individuals require basic needs to serve, including recognition, belonging, and satisfaction with helping others and serving their communities (Smeby, 2022). Satisfaction of volunteer firefighters impacts retention, indirectly impacting recruitment (Carter & Rausch, 2017). However, the literature

remains undecided, with some scholars like Smeby (2022) and Carter and Rausch (2017) contending that volunteers leave organizations like the fire service because of a lack of appreciation. Carter and Rausch (2017) further support this position, observing that volunteer firefighter satisfaction depends on psychological awards that include signs of appreciation. The failure to recognize these signs can lead to volunteers moving on from the organization, again impacting retention.

Retention is integral to sustaining the ranks of volunteer firefighters, especially once recruited. Over time, strategies to recruit and retain, including LOSAP programs, stipends, and other incentives, have been applied. Incentives are well deserved but do not typically increase the volunteer firefighter ranks through recruitment and retention. If incentives are not motivating individuals to join or stay, what will? Like paid employee retention, volunteer retention is one of the most significant challenges for volunteer-dependent nonprofit organizations (Garner & Garner, 2011). Few stop to realize volunteers' role in various public services like the fire service (Rehnborg, 2009).

Time Management

Time management is critical to individuals' perceived control of time and job satisfaction, as Claessens et al. (2007) have consistently demonstrated in their studies. While much literature has focused on undergraduate students, there are parallels to volunteer firefighters, who, like students, face limitations on their time (Britton & Glynn, 1989; Britton & Tesser, 1991). Britton and Tesser (1991) explored time-management practices in college students, emphasizing the importance of short-term planning skills and positive attitudes toward time for success.

Building on a theoretical model, Britton and Glynn (1989) and Britton and Tesser (1991) outlined various components of time management, including goal setting, prioritization, task generation, and scheduling. This model, akin to computer processing, highlights the information overload that students and volunteer firefighters experience. Britton and Tesser (1991) state that successful students excel in short-term planning but find long-term planning challenging due to increased task complexity.

The link between time management and job satisfaction extends beyond students (Claessens et al., 2007; Zimmerman et al., 1992) suggested. Replicating studies in the volunteer fire service may offer insights into enhancing time management skills in this unique context. The demands on volunteer firefighters, exemplified by additional requirements like Firefighter II, contribute to time-related challenges, impacting recruitment and retention (Thompson III & Bono, 1993). Despite the substantial time commitment—averaging 236 hours annually— volunteer firefighters show resilience, with 69% never considering resignation.

Role Conflict

Role conflict is at play when deciding on work, family, or volunteer commitments. Role conflict resolution theory supports the notion that choice is the reaction to conflict, with compromise and avoidance being factors (van de Vliert, 1981). Phillips et al. (2014) studied whether role ambiguity or role conflict impacted hospice volunteers in Australia. The research looked at factors that affected recruitment and retention for hospice services to maintain this service. Hospice volunteers were leaving their positions within the first two months of serving due to factors of career, illness and family, geographical relocation, and service-based issues (Phillips et al., 2014). The similarities may transfer to volunteer firefighters; however, the

research focused on a gap between role ambiguity and role conflict in attrition with paid staff but not its impact on volunteer staff. The conclusion was that role ambiguity and conflict were not concerns for hospice volunteers. The hospice volunteers' structured setting and the organizational support they received, including training, provided self-care strategies (Phillips et al., 2014). These results may be transferable to other volunteers, including firefighters who have been in the fire service for many years. Additionally, the literature considered the relationship between role conflict and burnout (Jones, 1993; Jawahar et al., 2007; Phillips et al., 2014).

Volunteer Lifecycle

When considering recruitment and retention factors, consideration must be given to an individual's time with an organization. Omoto and Snyder (1993, 2002) referred to this time as the volunteer life cycle. Like other socialization theories, Omoto and Snyder (1993, 2002) divided the process into three modules: antecedents (including motivation to volunteer), the volunteer experience, and the consequences of volunteering. They described the characteristics of the agency, the volunteer, and the social system in each stage but did not explain the process volunteers undergo in their roles.

Additional scholars such as Farmer and Fedor (1999), Haski-Leventhal and Bargal (2008), Mumford (2000), and Simon et al. (2000) have studied this phenomenon. Haski-Leventhal and Bargal (2008) reviewed the organizational socialization of volunteers, defined as the process through which one learns the job, internalizes organizational values, and goals, and becomes an effective and involved volunteer (p. 67). They developed the Volunteering Stages and Transitions Model (VSTM), focusing on five different phases in a volunteers' socialization

(nominee, newcomer, emotional involvement, established volunteering, and retiring (Haski-Leventhal & Bargal, 2008). However, Mumford's (2000) focus was on volunteer training and how an organization may increase the organizational identification of volunteers (Simon et al., 2000).

Summary

The nature of volunteering has changed over time (Malinen & Mankkinen, 2018, p. 605). Volunteer commitment is declining as the new type of volunteering is more "reflexive" – volunteers increasingly focus their efforts on their interests rather than on groups or the community (Malinen & Mankkinen, 2018, p. 605). The contribution of volunteer firefighters and VFSOs serving communities across the country cannot be understated. Individuals within organizations work beyond their formal employment contracts, and by extension, so do volunteer firefighters (Rayner et al., 2012).

Volunteer fire service organizations are ubiquitous institutions throughout the non-urban American landscape. Although their original mission was fire suppression, VFSOs currently respond to all natures of emergencies (Thompson III & Bono, 1993, p. 324). They provide essential public goods and are a locus for community organization and identity. The uniqueness of firefighting among volunteer activities arises mainly from its monopoly over its mission and vital, indispensable character (Thompson III & Bono, 1993). Emergency response is the most visible uncontrollable firefighter activity. Calls for emergency service come at all times of the day and night. There can be several calls in a day or no calls for days and weeks. In addition, ancillary activities consume more than two-thirds of the average firefighter's total time in the department, including training, company business, and community service.

Volunteer firefighters are highly qualified and dedicated individuals whose generous mutual effort provides their communities with essential and deeply respected services. There is no dispute in the literature on this issue.

Volunteer Fire Service Organizations are experiencing challenges in recruiting and retaining these individuals. Studying volunteer firefighters and learning their perspectives from their different experiences when they joined the fire service by addressing the decline, understanding factors that may influence it, and recommending actions to mitigate it or even change may lead to new strategies to recruit and retain future volunteer firefighters.

Methodology

A qualitative case study methodology was used to explore this phenomenon to collect insightful explanations for why individuals serve as volunteer firefighters and remain committed to the fire service. The study included a single instrument design to gain an in-depth inquiry into this phenomenon. The unit of analysis was the volunteer fire service, and convenience sampling was utilized. Sampling included current and former volunteer firefighters from rural and suburban fire service delivery organizations in all-volunteer and hybrid organizational models in seven municipalities in three counties in southern New Jersey and eastern Pennsylvania. The study consisted of a brief demographic survey, semi-structured interviews, and general observations of current and retired firefighters who may provide the opportunity to understand causal matters and explanations from individuals who serve as volunteer firefighters.

The qualitative case study approach permitted an exploration of a real-life, contemporary bounded system (a case), allowing for a deeper comprehension of the volunteer

fire service using multiple cases (i.e., volunteer firefighters) across multiple sites (i.e., fire companies/departments) (Creswell & Poth, 2018). Through an interpretive lens, a case study approach provided exploration and development of a thick description of an individual's experiences as a volunteer firefighter. It afforded reasonable methods for collecting, synthesizing, examining, and hypothesizing qualitative data for theory construction (Charmaz & Bryant, 2019). Since a case study approach is not a specific paradigm, it allows the utilization of various qualitative methodologies, including data analysis.

Study Sample

The participants studied were current and former volunteer firefighters. Volunteer firefighters live these experiences every day. When summoned to respond to an incident, they may be at home, enjoying their family, or working. Some employers may permit them to leave; others may go as prescribed by law. They are husbands, wives, brothers, sisters, aunts, uncles, parents, grandparents, and friends. They are young and old and everything in between. Each has joined the fire service vocation for reasons known only to them and shared with those they choose.

Data Collection

Data collection was through a purposeful and convenient sampling of current and former volunteer firefighters. Although the topic of volunteer firefighters is not new, research syntheses on a similar issue for a different purpose, which allowed the sampling approach to be fitted for this study (Suri, 2011). Participants were recruited by direct invitation to participate through researcher contacts in VFSOs in rural and suburban settings. The direct outreach included six VFSOs representing seven municipalities in two southern New Jersey and one

eastern Pennsylvania counties. The researcher requested approval to recruit direct members of the VFSOs at meetings or duty crew nights. The study sites granted permission via letter or email for recruitment access and use of the fire station for interviews.

Data is qualitative through semi-structured interviews of current and former volunteer firefighters. Data sources also included a participant demographic questionnaire before the interview. This strategy compared demographics, including but not limited to gender, age, ethnicity, education, employment, household income, and whether any possible hypotheses developed from the demographic data. Furthermore, by interviewing individual current and former volunteer firefighters, insight into their motivations and behaviors can be extracted to understand how they manage their time, family time, and work time to find time to give to their community. It may also explain why they continue to serve and remain committed, leading to a better understanding of what drives them while others leave.

Data Analysis

Data analysis was by grounded theory coding of participants' transcripts. The use of transcription provided more options for analyzing data. The research used a grounded theory coding scheme and memoing to identify additional themes outside of what the literature found in previous studies. Coding and memoing were done using qualitative software. Individual and cross-case themes were identified through case descriptions (i.e., interviews and observations) (Creswell & Poth, 2018).

Opening coding allowed for a consideration of what, who, how, when, and why (Moghaddam, 2006) within the volunteer firefighter transcripts. Data analysis continually compared, analyzed, and organized coded themes until saturation was reached (Creswell,

2002; Moghaddam, 2006). Data analysis then moved to axial coding (Goulding, 1999) and selective coding (Strauss & Corbin, 1990). Memoing supported the analysis and interpretation of codes (Hesse-Biber, 2017). To increase the credibility and validity of the findings, this study triangulated (Denzin, 1970) participant interviews, researcher observation, and artifacts from scholarly sources, official reports, and professional publications.

Summary

This study utilized a qualitative case study methodology to probe factors affecting volunteer firefighters' work, family, and volunteer balance to serve. The study employed a constructivist grounded theory tactic, allowing for a deeper grasp of why individuals volunteer in the fire service, how they manage their time related to family, work, and other life pursuits, and finding time to serve their community as a volunteer firefighter.

Results

The findings of this study help to consider the central research question for this problem of what factors affect volunteer firefighters' work, family, and volunteer balance to serve. The findings are expressed in the following three sections. The first section provides a demographic summary of the participants. The second section provides context for factors around recruitment, including volunteering, motivation, and public service ethos. The final section addresses factors concerning retention. These factors focus on the balance of time and role conflict necessary to continue serving and remaining involved in the VFSOs during the participant's lifecycle.

Participant Demographic Summary

In the semi-structured interview process, 13 participants shared their experiences as volunteer fire service members to understand why volunteer firefighters volunteer given work, family, and volunteering time demands. Specifically, what motivates an individual to volunteer in one of the most dangerous occupations in their community, and how do volunteer firefighters decide between work and family versus responding to emergency incidents or other activities of their VFSO?

The questionnaire asked seven demographic questions: age, ethnicity, gender, marital status, employment status, household income, and years as an active volunteer firefighter (See Appendix). Fifteen participants completed the demographic questionnaire, with 13 participating in the interviews. **<TABLE 1>**

Recruitment Factors including Volunteering, Motivation, and Public Service Ethos

What motivates an individual to volunteer in one of the most dangerous occupations in their community?

Participants were asked, "Why did you choose to join the volunteer fire service?" Participants' responses varied from being a legacy, having friends in-service, giving back to the community, a childhood goal, and time to give. Participants were not asked if they considered the risks or dangers associated with firefighting activities when they joined, nor did any participants offer insights into this in their response to why they joined.

Finding 1.1 Giving Back to the Community

The most common response to why individuals join the volunteer fire service is to give back to the community. Participants' responses included "It was an opportunity to give back to

the community," "You want to volunteer and give something back to the community," "I wanted to do something for the community," "I felt like I still had a little bit to give to the community," and "really just being part of something bigger for the community, the giving back to the community portion like I always thought that there was a piece of me that wanted to go into the military or some form of service," and "me being a volunteer I love giving back to the community."

Individuals in society will continue to want to give back to the community. Altruism, public service motivation, and ethos remain factors in society.

Finding 1.2 Legacy

Legacy was the second most answered reason from participants for entering the fire service. Volunteer Firefighter 1 (VFF1) stated, "So the fire service has been in my family; my grandfather, my father, and my stepfather were all members of the fire service." Other participants described following a parent, grandparent, or sibling as the impetus to join. They described joining via legacy as "it's a family thing," "I am a third-generation firefighter, my grandfather started in 1956, my dad in 1985, I started in 2009," "my brother was a volunteer firefighter at the same time with a neighboring company, and he was part of their junior program, so both my other brother and I joined (Interview VFF13)."

In this context, if an existing family member is volunteering in the fire service, there remains an opportunity for the legacy to continue. However, barriers exist that were not present in the past for this entranceway to stay viable. For example, work commitment may prevent an individual from following a family member. Lack of affordability to remain in the

community may also be a barrier. VFSOs cannot rely on legacy, although it remains a path to enter the fire service.

Finding 1.3 Other Factors

Friends, time, and childhood goals were why individuals joined the volunteer fire service. These connections provided paths and continuity into VFSOs and remain viable. One participant described joining as "every boy's dream" and "lifetime goal (Interview VFF6)."

If legacy was not a path to the volunteer fire service, friendship was. VFF4 "felt the camaraderie like a brotherhood, which was very important," and VFF12 stated, "because it was fun to ride with a bunch of our friends."

Summary

The reasons individuals join the fire service vary. Giving back to the community and legacy paths remains feasible. However, the volunteer fire service cannot rely on these reasons to replenish the ranks. Traditional approaches need to be augmented to strengthen recruitment.

Retention Factors including Balance of Time, Role Conflict, and Decision-Making

How do volunteer firefighters decide between work and family versus responding to emergency incidents or other VFSO activities? Participants were asked several questions about decision-making and prioritizing their time between volunteer activities with their VFSO and their families or work, including how they felt after making the decision and how their family or employer reacted. Questions included deciding between an important family or work commitment and a fire call or activity, processing the decision, how the decision made the participant feel, the reaction of the family or employer, and how the participant would handle a

similar decision the next time. Furthermore, participants were asked if anything would help balance their family, work, and volunteer fire service obligations. Determining the number of hours, a member gave to their VFSO was not discussed.

Finding 2.1 Deciding between an important family or work commitment and a fire call or activity

All the participants have had to decide between an important family function or work commitment, responding to a call, or participating in a VFSO activity. Some participants were torn by the choice before them, while others were clearer and definitive. Factors that impacted the decision process included family or employer support, marital status, and type of emergency call.

Family, job, and fire service or job, family, and fire service was the consensus factor in deciding whether to attend a fire service emergency call or other activity or family or work obligations. For many participants, this was clear. Extracts supporting this include:

"Although family is first, my job, I guess at this point, becomes second," with the caveat that the "fire service becomes first, especially when I know it's a confirmed fire or extrication or water rescue, and I know someone's really in danger, versus an alarm call (Interview VFF12),

"...I gave time to the fire company, to the detriment of time spent with my family. It's a hard thing to do; you never know when the call is going to come in, and you know, if you don't go, the fire company's going to be shorthanded (Interview VFF5).

Participants experienced conflict and frustration as to their obligations. According to Interview VFF8:

"This is my first kid. I've never had to balance work, family, a baby, and then the firehouse on top of it; I don't want to have to give up the firehouse because of the baby, but that being said, if I have to, obviously, that's going to be the first to go and limit my time there because, obviously, my work pays my bills, and then my family, I can't say no to them it's got to be the firehouse so that'll limit the time for a little while." (Interview VFF8)

"The family kind of throws a wrench in things. I feel like it's definitely a lot harder to turn the pager on because I either hear it and can't necessarily go at the time" (Interview VFF13).

Finding 2.2 The decision process

Participants were influenced in their decision-making process. The process considers family or employer support, marital status, and type of emergency call. The type of emergency call is a factor as well. If the participant deemed a call a non-emergency, such as an alarm system, they might not respond or, at minimum, delay their response. For example, VFF3 stated, "If it's wires, if it's an alarm, if it's something like that, I'm not going to go if it's a family function, but if it's one of the other more severe situations, then I go."

Some participants cited the inclusion of their families in the decision-making process. VFF5 said he had "to think long and hard at times, and obviously, my wife asked to be part of that decision-making. And some things obviously took priority over the fire company." "You only get so many birthdays and with kids and your grandparents and all that stuff "(Interview VFF8).

Work was also a factor in the decision-making process. Participant's focus on ensuring the ability to earn a living and pay their bills was a factor. The risk assessment of one participant

was clear, "basically, I don't leave work for fire calls. I can't. It's not worth risking my job or anything like that to run a fire" (Interview VFF8). Participants will impose a deadline when they do not respond to calls to ensure they arrive at work on time. "I work Monday through Friday 7:30 AM to 4 PM, so anything before six o'clock in the morning I don't go because I don't want to risk my job" (Interview VFF11). This participant expressed it this way:

> "I stopped running called at midnight because I can't risk being late for work and potentially losing my job because of a call. I mean, I need my job, I need to make my money, so I can pay my bills as much as I would love to run to that structure fire at two o'clock in the morning, I have to make a decision that obviously my work is more important right now, and I can't risk or have any bad remarks on me as an employee." (Interview VFF8)

Summary

The decline in volunteer firefighters is real and impacts VFSOs' ability to provide reliable and efficient fire protection and related emergency services to their communities. Barriers identified in the literature review remain factors influencing the time and energy of individuals willing to volunteer. The study also exposed that volunteer firefighters have managed to balance their fire service activities with their personal and professional worlds through prioritization, influencing their level of involvement throughout their service time. VFSOs would be prudent to work more collaboratively with the individual, recognizing where the individual is at in their life when recruited and continuing if possible. A key theme to emerge from the study was the return on involvement, and the level of involvement begins as soon as the individual joins.

Volunteer firefighters manage their lives based on available time through prioritization. Participants identified several instances in which family or work will override any activity with their fire service obligations. The decision-making process involves the risk of losing income or missing a significant family event, such as a child's birthday or spousal anniversary. Although some participants mentioned employer and family being sympathetic and supportive, there was a pause when answering how the family or employer reacted.

Participants appear to self-regulate as they progress in the fire service. Unlike career firefighters who train on the job and clock in and out for their shift, the effort to be a volunteer is quite substantial and, at times, can be moderately overwhelming. This effort may not translate to other organizations that rely on volunteer personnel.

Some participants joined in their late teens and early twenties, while others joined later. Some joined to follow in their family and friends' footsteps, and others wanted to give back to their community. Once recruited, some had time to be fully involved and committed to attending many calls (day and night), training, meetings, and ancillary activities. Others gave what time they had. At some point, all participants had to decide their level of involvement over time. Triggers included work, school, family (i.e., parenthood), and leadership issues. Some triggers took the participant away from the organization and community, and others remained in the community. Those remaining participants adjusted their level of involvement based on prioritizing what mattered most. Earning a paycheck was high on that list; therefore, participants who needed to be at work on time would limit their fire service availability to hours when they were home from work leading up to an hour in the morning that they

imposed as a deadline of unavailability. For example, one participant would not respond to calls after midnight, and another would not after 5 AM.

Understanding this, a VFSO could work with individuals to ensure they understood their availability and work within those constraints to maximize the participants' involvement when available to the VFSO. This requires effort from the VFSO from a volunteer management perspective. It starts at the recruitment stage and continues throughout the member's tenure with the VFSO. Working with the member is not one and done upon recruitment. It should be done in the context of an annual performance review found in career organizations of all fields by sitting down with the members at the end of the year to review how involved they were and then looking ahead to the coming year. For example, a member who has maintained high involvement has announced they are expecting a baby. The VFSO would want to understand how the participant's level of involvement might change up to and including at least the baby's first year after the pregnancy.

Volunteer firefighters are not convinced that the community knows a volunteer or combination fire service delivery model services them. Holmes et al. (2019 in O'Halloran & Davies, 2020) call attention to a general lack of awareness in the broader community about the reliance on volunteers for firefighting. If the community is indifferent, this may impact whether prospective volunteers will be recruited into the fire service.

Discussion

Responses yielded a variety of reasons one becomes involved and why one remains engaged as a volunteer in the fire service. Some of these reasons are grounded in the literature, while others are not. While the literature speaks to time demands, a shift in societal

demographics, and leadership, the study revealed some reasons. As constant comparative analysis progressed, the notion of return on involvement emerged. Return on involvement in the literature refers to consumerism. While this may be appropriate in the business field, it has application in the social sciences when considering an individual's return on involvement in the context of opportunity cost or sunk cost.

Individuals who decide to volunteer and continue to volunteer must address what they get out of volunteering throughout their volunteer life cycle. Several participants joined when they were single or after their kids required as much attention when they were younger and more in need. The stage of their lives factored into their decision-making between family or the VFSO.

The result by which an individual becomes a volunteer firefighter depends on circumstances and influences in one's life. These circumstances and influences evolve throughout an individual's life experiences. For example, family, friends, and teachers affect one's value system in various ways and at different junctures in one's life. Public service ethos expresses that impact for some early in life, while it may take years to manifest for others. Whether one entered the volunteer fire service earlier than others, sustaining in the service remains an individual's choice and reason(s). The same goes for those who choose to leave and their reason(s) to do so.

The fire service enjoys a long-standing tradition that often involves generations of families from a historical context. For example, as suggested by Finding 1.2, a volunteer firefighter joined because his father was a member. The influence, specifically of family, impacts legacy volunteers. Whether it was a parent, a grandparent, a sibling, or other family

members, joining the fire service was the following event. For some, it was a natural transition from hanging out at the station to participating in non-emergency activities. They may be second, third, and even fourth-generation volunteers. Yet, legacy members have their reason(s) for enduring or abandoning the fire service. Unfortunately, VFSOs cannot count on legacy recruitment. Children of current volunteer firefighters are not necessarily following in their parent's footsteps, nor can the VFSO rely on community members to give their time as in the past (Edwards, 2010).

Besides legacy, other underlying factors include time demands, stringent training requirements, population shift, change in community dynamics, leadership issues within the VFSO, and a decline in civic responsibility. Leadership, culture, diversification, marketing, and other benefits are fundamental elements to support the effort of recruitment and retention to identify new strategies and opportunities (Edwards, 2010). Volunteer firefighters who consider benefits are not overly zealous when the return on their time investment or payment from a length of service award program is in the distant future and adds no immediate value (Compton & Granito, 2002). The value of any VFSO depends on its people. The best way to safeguard its quality is to recruit and retain highly motivated and devoted individuals (Witt & Patton, 1999).

Volunteer firefighters also understand the time demands required to serve. There are no illusions. Demands vary across local VFSOs for training, response, meetings, and other activities such as fire prevention, community events, parades, etc. Requirements are within the control of the VFSOs from the participants' perspective and are generally flexible but do not necessarily account for the individuals' time.

Managing and accounting for that time and ensuring minimum staffing for response coverage remains challenging. VFSOs and municipalities may be exposed due to risks to firefighter safety and the availability of mutual aid when called upon to meet the public's expectation of timely response and incident stabilization.

When considering volunteering, public service ethos, motivation, time commitment, and other factors, we think of what an individual gives or contributes more than what they receive in return: satisfaction, camaraderie, family, and friends, to name a few. This return on involvement is what fire service leadership must consider when recruiting and retaining volunteer firefighters. Everyone has unique reasons for joining the service or remaining in it. When they have reached diminishing returns on their involvement, they are most vulnerable to leaving the service. Their sunk cost has reached the limit they are willing to go. Unless the fire service works with the individual to accommodate what will keep them involved beyond the recruitment stage, it is critical to receive the maximum involvement from them while they are willing and able to contribute. This includes addressing causes of why volunteers abandon the fire service, including but not limited to poor leadership, poor management, time demands, and training requirements.

Volunteer fire service delivery organizations must find ways to keep people involved. For example, determining the return on involvement for the people they are recruiting, whether flexibility with time or other benefits that the VFSO may provide through legislative, regulatory, or local means.

The Return on Involvement (ROI) concept requires the engagement of the VFSO at the point of entry (recruitment) and through member retention. The VFSO should recognize that

the ROI for each member will fluctuate over time. Participants identified at the entry point were single, married with no children, or married, but children were independent. Full involvement may be realized at this stage of their service with the VFSO. The member is not tethered and has minimal outside obligations interfering with their involvement. Rigid VFSO requirements are not a barrier. The individual has time to attend the many hours of basic certification training to become a firefighter or, if already trained, to participate in VFSO training, meetings, and other activities. Their time limitations may be restricted to work or school and annual activities such as birthdays, anniversaries, holidays, and other milestone events.

Volunteer fire service organizations cannot let their guard down at this level of involvement. Periodic direct engagement with the volunteer to determine lifestyle changes should be ongoing to prepare for a shift on the involvement scale (see Figure 1). For example, a member announces they are expecting their first child. Full involvement may move to moderate involvement during the pregnancy, then to some involvement to no involvement once the baby is born. As the baby gets older, the level of involvement may reverse. How a VFSO plans this with the member may be essential to retaining the member long-term and getting some availability from the member during the no to low involvement period.

The individual member defines how much an individual participates with the VFSO relative to balancing family, work, and other life pursuits and meeting the organization's requirements and level of involvement. The literature and findings identify that factors influencing involvement include family, work, school, other interests, personal needs, and goals. This author defines the levels of involvement as follows:

- No Involvement (N.I.): The member has stopped attending VFSO emergency calls and activities.

- Some Involvement (S.I.): The member participation is limited to minimum responses to calls, training, and meeting attendance.

- Moderate Involvement (MI): The member participates in all activities when available.

- Full Involvement (F.I.): The member participates in all activities and makes themselves available when they are typically unavailable.

The levels will fluctuate over the members' volunteer life cycle from recruitment through retirement, as demonstrated in Figure 1.

Individuals self-regulate their work-life volunteer balance based on various factors they experience throughout their volunteer life cycle. Prioritization and decision-making determine the level of involvement at those moments. The VFSO must work through engagement points during this cycle to ensure the return on involvement (ROI) is more than less involvement of the volunteer firefighter. The engagement may require a more individual approach against rigid requirements, threatening the ROI. For example, a member who can provide support involvement but cannot make the response requirement may not be incentivized to attend the support activities if there is no benefit compared to a member who meets response requirements. These roles are essential to the day-to-day operations and mission of the VFSO but may be valued differently.

Factors already impacting the decline in volunteer firefighters are influencing participation and involvement. Therefore, VFSOs must be mindful of issues affecting their members to address these declines. The days of simply having standards that apply to

everybody, cultural issues within the department, such as family members who hold key positions, long-term chiefs, and administrative officers, all have a bearing on whether someone remains involved or not in some respects as well as the volume of training, family, life, and things of that nature.

The decline in volunteer firefighting should be a red flag for communities receiving VFSOs' services. The drop is not new, and it has been trending down for many years, as identified in Pennsylvania Senate 6 Report Pennsylvania (Senate, 2018) and other data (CPSE/ICMA, 2020; Evarts & Stein, 2020; NVFC, 2015; USFA, 2007; Senate of Pennsylvania, 2004, 2018). Previous research identified time demands, training requirements, other activities (e.g., fundraising), leadership, the lack of affordability to reside in a community, the community not understanding the type of service delivery it receives, and other factors. Traditional recruitment strategies continue but are not as effective as other innovation opportunities could be.

Return on involvement from the VFSO perspective is critical in the recruitment and retention of human capital to ensure the organization's mission is achieved short-term on each response and long-term for the viability of the VFSO. This perpetual succession requires a collaborative, engaged, long-term commitment from the VFSO, the local government, and the community. County, state, and the federal governments must be included in the collaborative governance to ensure sustainability. Perpetual grants should not be relied on as the answer. At best, grants serve as a band-aid approach. Leaders must look at innovative ways rather than on the traditional reliance and expectations of the volunteer fire service. For many communities,

losing the volunteer fire service will be financially devastating. This issue is not just a domestic issue but a global one. The time is now to slow or stop the decline.

Limitations

Research is not without limits, and this study was no different. The study intentionally omitted paid fire service organizations, focusing on volunteers. The study sample size was limited to 13 current and former volunteer fire service members representing four volunteer fire service organizations servicing five municipalities within two states.

Although the findings are valid, this research is neither generalizable nor intended to be applied to other volunteer fire service organizations as service delivery models vary by organization and location, such as remote, rural, suburban, and urban.

Limitations of this study also include self-selection bias from a diversity perspective. The sample was from volunteer fire service organizations in predominately Caucasian rural and suburban response areas. This raises the question of whether the participants' views are or are not reflective of the broader group representing other regions with more diversity (Lantz and Runefors, 2021).

Recommendations

Factors affecting volunteer firefighters' work, family, and volunteer balance to serve, what motivates an individual to volunteer given the time demands of work, family, and volunteering in one of the most dangerous occupations in their community, and how volunteer firefighters decide between work and family versus responding to emergency incidents or other activities of their VFSO were explored and discussed in this study. Traditional recruitment and retention strategies may yield nominal results for some VFSOs and communities while others

struggle. Given the implications of the decline in volunteer firefighters and the cost of establishing a combination or fully paid fire services, the following applied and scholarly research recommendations should be considered. The applied recommendations focus on potential and current volunteer firefighters, VFSOs, and communities served by volunteer firefighters. Future academic research focuses on whether the dangerous nature of firefighting impacts the decision to volunteer, whether there is a relationship between leadership and retention, expanding time-management studies of college students to volunteer firefighters, and the emerging themes of the return on involvement to the VFSO and the individual volunteer firefighter's level of involvement.

Recommendations to Potential and Current Volunteer Firefighters

There is no single formula, and balance is not equal for all individuals. Balance is about personal choices and distributing time and energy across important areas of the individual's life cycle. There is no right or wrong. When considering joining a VFSO, individuals must define what is important and prioritize from there. Balance will vary over time, and change is merited due to the individual's experience with the VFSO. The correct balance for a single person will differ when one has a partner, has children, starts a new career, or is retiring. Recognizing factors such as unrealistic demands, unexpected circumstances, and time constraints during their life cycle with the VFSO will allow a volunteer to consider time to unplug or "me time," family time, or time for work, from the VFSO even if it is one night per week or one weekend per month for example.

Recommendations to Volunteer Fire Service Organizations

Volunteer fire service organizations should consider how the individual prioritizes their time and be supportive from recruitment through retirement from the fire service. Working within the structure of requirements required by the organization, the VFSO should be as flexible as possible in finding alternative solutions to manage its volunteers. Just as employees may feel trapped in a rigid system such as civil service, volunteers may feel trapped in a strict system to make specific minimum response and attendance requirements (Kettl, 2021). This may be a partial catch-22 regarding training, meeting attendance, and response. However, consideration should be given to the volunteer's lifestyle and points in their life cycle. For example, some participants joined in their late teens and early twenties, while others joined later. Some joined to follow in their family and friends' footsteps, and others wanted to give back to their community. Once recruited, some had time to be fully involved and committed to attending many calls (day and night), training, meetings, and ancillary activities. Others gave what time they had. At some point, all participants had to decide their level of involvement over time. Triggers included work, school, family (e.g., parenthood), and leadership issues. Some triggers took the participant away from the organization and community, and others remained in the community. Those remaining participants adjusted their level of involvement based on prioritizing what mattered most. Earning a paycheck was high on that list; therefore, participants who needed to be at work on time would limit their fire service availability to hours when they were home from work leading up to an hour in the morning that they imposed as a deadline of unavailability. For example, one participant would not respond to calls after midnight, or another would not after 5 AM.

Understanding this, a VFSO could work with individuals to ensure they understood their availability and work within those constraints to maximize the participant's involvement when available to the VFSO. This requires effort from the VFSO from a volunteer management perspective. It starts at the recruitment stage and continues throughout the member's tenure with the VFSO. Working with the member is not one and done upon recruitment proposition. It should be done in the context of an annual performance review found in career organizations of all fields.

The VFSO should consider implementing an annual involvement or activity review like a yearly performance review. This should coincide with longitudinal strategies to determine what influences the member's life and how that may equate to involvement with the fire service in that given year. Volunteer fire service organizations would be prudent to work more collaboratively with the individual, recognizing where the individual is at in their life when recruited and continuing if possible. By continuing this process and engaging the volunteer, the VFSO is better positioned to manage the volunteer's total capacity of involvement over time.

Recommendations to Communities Served by Volunteer Firefighters

The participants were unclear whether their communities, including the elected officials, understand the fire service delivery type as a volunteer-type and the potential challenges the VFSO is facing, nor how this may impact the community financially. Participants based their responses on interactions with elected leaders and community residents. Community members who were aware and supportive did not translate into membership. Considering this general lack of awareness, further research should include the community perspective.

Recommendations for Future Research

It is essential to navigate the relationship between members and VFSOs, recognizing that work-life balance is challenging for volunteer firefighters as they manage full-time and part-time work schedules, families, and other commitments outside the fire service. Volunteer fire service organizations' involvement in member mentoring and monitoring is critical to their success in the volunteer fire service.

Leadership. This study exposed factors mentioned by the participants but requires further inquiry. For example, two participants, both former volunteers, discussed leadership as an issue. In response to a question about returning to the local VFSO, one stated, "But on the other side of it, to know the organization, the way that it's built today, and the leaders that are there, it'd be very difficult mentally to go back." Although the participant works per diem serving another municipality, his hometown no longer benefits from his service. The other participant offered that the officers are good at management but poor at leadership, stating, "I get the sense that our company was run very well. From a management perspective, like there was never any hint of scandal, no one was stealing, and the bills were paid. We had up-to-date equipment of the date certifications, but that's management that's not leadership. They're very different. There seemed to be no person in a leadership position." Leadership impacts are a known factor that should continue to be addressed, and VFSOs must recognize this in managing volunteer retention. Future research should focus on the leadership factor, particularly regarding retention.

Time Management As noted in the literature review, studies on time-management practices in college students treat time as a limited resource that individuals can effectively

manage. Successful students demonstrate short-term planning skills and positive attitudes toward time, enabling effective management of immediate responsibilities. However, long-term planning proves more challenging, especially with daily complex tasks. The potential transferability of these findings to the volunteer fire service is an intriguing avenue for further investigation.

Emerging Themes. The decline in volunteer firefighters exists and impacts VFSOs' ability to provide reliable and efficient fire protection and related emergency services to their communities. Factors identified in the literature review remain, influencing the time and energy of individuals willing to volunteer. Research should continue to inform these factors, further impacting volunteers' efforts to balance their lives to persist as volunteers and understand other motives besides altruistic public service motivation to recruit more volunteers. In addition, research should be conducted relative to the non-answer of how dangerous the occupation of firefighting impacts the decision to volunteer.

The study also revealed that volunteer firefighters have balanced their fire service activities with their personal and professional worlds through prioritization, influencing their involvement throughout their member life cycle. Furthermore, existing studies have considered the "life cycle of a volunteer" but lack a connection between the volunteer's level of involvement. Two key themes emerging from the study were the return on involvement to the VFSO and the individual's level of involvement, beginning as soon as the individuals join. Future research should develop these themes further.

Conclusion

The volunteer fire service in the United States is experiencing a decline. The decline in volunteer firefighters should be a red flag to communities receiving VFSOs' services. Time demands, changes in family dynamics, and work schedules constrain the time an individual can volunteer. The findings provide valuable insights into the challenges faced by volunteer firefighters and offer actionable strategies for recruitment and retention. By understanding factors affecting volunteer firefighters and how they balance their daily lives, VFSOs, the communities they serve, and other volunteer organizations will be better positioned to address opportunities to develop innovative recruitment and retention strategies that focus on the individual and ensure the sustainability of VFSOs.

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VFF Demographic Questionnaire

1. What gender do you identify as?

    A. Male
    B. Female
    C. Non-binary/third gender
    D. Prefer not to say.

2. What is your age?

    A. 18 - 24
    B. 25-34
    C. 35-44
    D. 45-54
    E. 55-64
    F. 65 or older
    G. Prefer not to answer.

3. Please specify your ethnicity.

    A. African-American
    B. Asian
    C. Caucasian
    D. Latin or Hispanic
    E. Native American
    F. Native Hawaiian or Pacific Islander
    G. Two or More
    H. Other/Unknown
    I. Prefer not to say.

4. Are you married?

    A. Yes
    B. No
    C. Domestic Partnership
    D. Prefer not to say.

5. What is your employment status?

    A. Student

B. Unemployed
C. Self-employed
D. Full-time
E. Part-time

6. What is your annual household income?

A. Less than $25,000
B. $25,001 - $50,000
C. $50,001 - $100,000
D. $100,001 - $200,000
E. More than $200,000
F. Prefer not to answer.

7. How many years were you an active volunteer firefighter?

A. Less than 5
B. 6-10
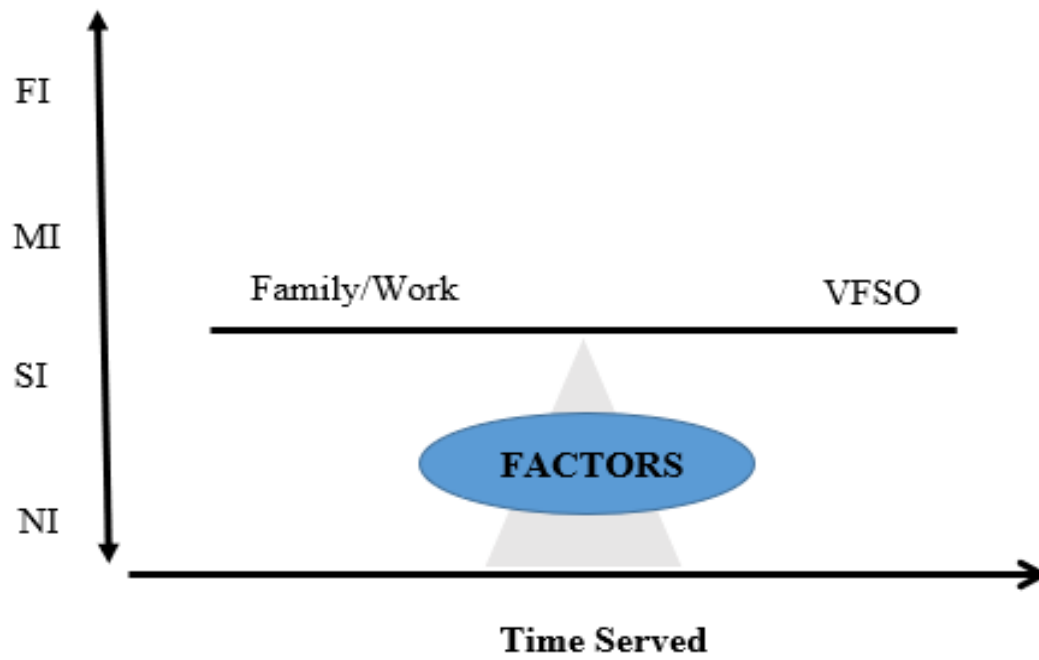C. 11-15
D. 16-20
E. 21-25
F. 26-30
G. 30 or more

Table 1

Demographic Characteristics of the Study Participants

Demographic factors	Participants	Percent
Gender		
Male	14	93
Female	1	7
Age		
25-34	4	27
35-44	2	13
45-54	6	40
65 or older	3	20
Ethnicity		
Caucasian	15	100
Marital Status		
Married	9	60
Single	6	40
Employment		
Full-time	8	57
Part-time	1	7
Self-Employed	2	14
Retired/Other	3	21
Annual Household Income		
$25,001-$50,000	2	13
$50,001-$100,000	5	33
$100,001-$200,000	5	33
$200,000 or more	1	7
Prefer not to answer	2	13
Years Active		
6-10	6	40
11-15	3	20
16-20	2	13
21-25	1	7
26-30	1	7
30 or more	2	13

Note. N=15

Figure 1. *Levels of Involvement*

Author Biography

Dr. Christopher J. Schultz is an assistant dean at Thomas Edison State University. Dr. Schultz is a practitioner-scholar with a diverse background in public service, including experiences in higher education administration and instruction, local government administration, emergency management, and the volunteer fire service. His expertise includes leadership and management, organization and administration, and budgeting. He serves several organizations, including on the Board of Directors of the Keystone State Chapter of the American Society for Public Administration, the Advisory Committee of the International Public Safety Association Board of Directors, and the Chair of the Leadership Section. He also serves on the FEMA Higher Education Service Learning and Leadership group and is a National Volunteer Fire Council member. Dr. Schultz holds a Doctor of Public Administration from West Chester University (P.A.), a Master of Science in Public Safety Management from St. Joseph's University (P.A.), a Master of Public Administration from Rutgers University at Camden (N.J.), and a Bachelor of Arts in Criminal Justice from Stockton University (N.J.).

Off-Duty Discipline of Public Employees: Extension of State Authority under the First Amendment

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Abstract

The Internet, including social media, private blogs and websites have opened the door for individuals to voice their opinions publicly on a myriad of social and political topics. It has also, presented challenges for public employers whose employees have posted content to these communication mediums that are threatening, inflammatory, discriminatory, disruptive to the employer, or perceived as unacceptable. The courts have established, that public employers may not restrict the speech of public employees who are speaking as citizens on matters of public concern (*Pickering v. Bd. of Educ.*). Even when speaking on a matter of public concern the employee's rights must be balanced with the public employer's interest in promoting efficiency in the delivery of public services (*Connick v. Myers*). Finally, public employee speech made pursuant to official job duties is not entitled to First Amendment protection (*Garcetti v. Ceballos*). Public entities need policies conforming to current First Amendment case law that address social media and off-duty conduct including speech. Policies must not create a prior restraint that chills freedom of speech at the outset on matters of public import but can prohibit speech that is sexually lewd, threatening, harassing, discriminatory or disruptive in nature. Public administrators with the assistance of legal counsel must stay abreast of evolving public employee First Amendment case law. Finally, because what constitutes a matter of public concern or material disruption, is a question of law, matters involving public employee speech must be addressed on a case-by-case basis with guidance provided by legal counsel.

Key Words: Disruption, First Amendment, Public Employee, Public Concern, Speech

Introduction

The Internet, including social media, private blogs and websites have opened the door for individuals to voice their opinions publicly on a myriad of social and political topics. It has also, presented challenges for government employers whose employees have posted content to these communication mediums that are threatening, inflammatory, discriminatory, disruptive to the employer, or perceived as unacceptable. The object of this research will be the First Amendment rights of public employees for off-duty speech, assembly and related activities and the authority of government as an employer to regulate such speech and activities. Unlike private sector employees, government employees enjoy limited First Amendment protections relative to speech and assembly. Speech is not limited to the spoken word but also to protected expressive activities.

While the Fourteenth Amendment is not the primary focus of this research it will be touched upon as it relates to due process for public employees regarding their First Amendment rights. It is also through the incorporation of the Fourteenth Amendment that the First Amendment has been made applicable to the states.

The methodology used herein is the qualitative methodology of document analysis. The documents analyzed are U.S. Federal Appellate Court opinions. Government as an employer has narrow authority to limit the First Amendment freedom of speech rights of public employees while at work. This inquiry will attempt to determine based on current case law to what degree government as an employer can legally limit a public employee's off-duty speech and right to assembly. Although the findings of this inquiry are intended to guide public administrators, public employees may also find them informative and beneficial.

Literature Review

The courts have established, that public employers may not restrict the speech of public employees who are speaking as citizens on matters of public concern (*Pickering v. Bd. of Educ.*). Even when speaking on a matter of public concern the employee's rights must be balanced with the public employer's interest in promoting efficiency in the delivery of public services (*Connick v. Myers*). Finally, public employee speech made pursuant to official job duties is not entitled to First Amendment protection (*Garcetti v. Ceballos*). Before proceeding with the inquiry into what authority public employers have regarding limitation of employee off-duty speech, let's pause for a brief review of the Fourteenth Amendment which made the First Amendment applicable to the states through the incorporation doctrine and provides the basis for procedural due process.

Fourteenth Amendment

The First Amendment, along with the other amendments in the Bill of Rights originally applied only to limiting the powers of the federal government. However, in 1925 the Supreme Court in *Gitlow v. New York* held that the incorporation doctrine makes the First Amendment applicable to the states and protects personal rights and liberties from impairment by the states. However, freedom of speech is not an absolute right and states through their police powers may punish speech that is "inimical to the public welfare, tending to corrupt the public morals, incite crime or disturb the public peace" (*Gitlow,* 268 U.S. at 667).

Government employees generally have a property right in their employment. In *Cleveland Board of Education v. Loudermill* the court held that government employees who have constitutionally protected property interest in their jobs are entitled to a hearing before

being discharged. The essential requirements of due process for government employees are "notice and an opportunity to respond" (*Loudermill,* 470 U.S at 533). The purpose of due process hearings is to provide a safeguard against mistaken decisions and to show there are reasonable grounds to believe the charges are true and support the proposed action against the employee. Further hearings provide the aggrieved employee an opportunity to be heard.

First Amendment challenges by employees are frequently accompanied by alleged claims of due process violation. However, only in a few instances of the cases analyzed in this research have the courts found violation of due process and Fourteenth Amendment protections. From this it can be inferred that government officials are generally doing an effective job of ensuring due process when disciplining employees.

First Amendment

The challenge for Government as an employer is finding the balance between a public employee's freedom of speech and promoting efficiency of public service. However, Government as an employer is not required to "allow events to unfold to the extent that disruption of the office and destruction of working relationships is manifest before taking action" (*Connick,* 461 U.S. at 152). In *Dunn v. Carroll*, the plaintiff Dunn the administrative assistant to the fire chief was suspended for refusing to remove an American flag patch from his uniform. Dunn sued for violation for his First Amendment right to free speech and the district court granted summary judgment to the fire district. The Eighth Circuit reversed and remanded the case finding that wearing the flag conveyed "particularized speech," that the speech pertained to a matter of public interest, and there was a question of fact to whether the flag patch created disruption in the workplace under the *Pickering-Connick* balancing test.

Connick v. Myers involved the distribution of an internal office questionnaire. Myers, an assistant district attorney upset over a transfer distributed a questionnaire to co-workers asking their views on the transfer policy, office morale, and the level of confidence in supervisors. District Attorney Connick terminated Myers for refusing to accept the transfer. Myers filed suit claiming violation of her First Amendment right of freedom of speech. The Court held the discharge did not violate the First Amendment and that there is a balance between public employees speaking on matters of public concern (*Pickering v. Bd. of Educ.*), and the interest of the State as an employer in "promoting the efficiency of the public service it performs through its employees" (*Connick*, 461 U.S. at 140). The Court continued, that the government as an employer "must have wide discretion and control over the management of its personnel and internal affairs" (*id*. at 151). Clarifying *Connick*, the Court held in *Waters v. Churchill,* that *Connick* must be applied on a case-by-case basis and should be applied to what the government employer reasonably believed was said, not what the trier of fact ultimately determined was said.

In *Pickering v Bd. of Educ.,* the court held that absent proof of false statements knowingly or recklessly made, public employees speaking as *citizens* on matters of public concern are afforded First Amendment protection. What constitutes a matter of public concern is a question of law by the "the content, form, and context of a given statement, as revealed by the whole record" (*Connick,* 461 U.S. at 147-148). The *Pickering* and *Connick* cases combined are known as the *Pickering-Connick* Balancing Test. In a third case, *Garcetti v. Ceballos,* the Court held that public employees relinquish some free speech rights in balance for the effective operation of government. Conversely to *Pickering*'s protection of speech as a citizen on matters

of public concern, public employees speaking or writing as part of their official duties are generally not protected by the First Amendment.

Social media has opened a new frontier for government employees to exercise their First Amendment right to freedom of speech on countless topics including social and political opinions, discussing matters of public concern, and communicating personal grievances. This has blurred the line between on-duty and off-duty speech and presents complex questions of law for Courts to decide. Analysis of some of these cases follows.

Social Networking and ecommerce

Some public employees use social media as a platform to post their personal grievances resulting in discipline and litigation. Courts approach litigation involving public employee speech on social media on a case-by-case basis analyzing the level of disruption the speech causes or has potential to cause in the efficient delivery of government service. Police officer Susan Graziosi critical of the Police Chief for not sending officers to the funeral of an officer killed in the line of duty in another city, posted to the mayor's public Facebook page a statement critical of the Police Chief (*Graziosi v. City of Greenville Mississippi*). The post was made from Graziosi's home computer while off-duty. Having determined the posts violated department policy the Chief terminated Graziosi's employment, and she subsequently filed suit against the City for allegedly violating her First Amendment rights. Applying the *Pickering-Connick* balancing test, the Fifth Circuit Court of Appeals held that Graziosi spoke as a citizen and not a public employee when she made the posts satisfying the first prong of the test. However, the Court held that Graziosi's claim that her speech was on a matter of public concern failed. The Court found that Graziosi's posts started by addressing a subject that could

be considered a matter of public concern but quickly evolved into a rant attacking the Police Chief's leadership making the speech more akin to an internal grievance as in *Connick* and not entitled to First Amendment protection. The Court concluded that the Chief was justified in terminating Graziosi to prevent insubordination and future disruption in the department.

In a similar case a city police officer (Kirkland) was terminated for using her Facebook account to criticize the county sheriff (*Kirkland v. City of Marysville, Tenn*.). Department administrators premised the termination over concern that Kirkland's posts would undermine the departments relationship with the Sheriff's Office. The Sixth Circuit Court of Appeals opined that the City's well-documented judgment that Kirkland's hostility towards the Sheriff warranted disciplinary action, was reasonable.

In another case involving Facebook and potential disruption, the Eleventh Circuit Court of Appeals held that Gresham, a police officer, was speaking on a matter of public concern when she posted on her Facebook page that was set to private, criticism of a fellow officer's unethical interference with an investigation (*Gresham v. City of City of Atlanta*). Gresham was denied consideration for promotion due to her pending discipline for the Facebook post because department policy does not permit officers to be considered for promotion who have a disciplinary investigation pending against them. Gresham filed suit, and in applying the *Pickering-Connick* balancing test the Court held the balance was tipped in favor of the department based on the potential disruption Gresham's comments could create for the department. The terminology *potential disruption* is instructive, as employers do not need to wait until the damage of actual disruption has occurred to commence action, only that a reasonable possibility of disruption exists.

A nexus must be shown between off-duty public employee speech and the employer for the employer to have authority to regulate the speech. In *San Diego v. Roe,* the Court found such a nexus when Roe took deliberate steps to link videos and goods for sale on his website to his police work exploiting the image of his employer. Roe, a police officer, made a lewd and sexually explicit video of himself stripping off a police uniform and performing a sex act. He listed for sale this and other custom videos along with police equipment on the adults only section of eBay. When Roe's supervisor, a police sergeant, discovered the videos being offered for sale he reported it up the chain of command, and an internal affairs investigation was conducted. The investigation revealed Roe's behavior violated department policy and Roe was ordered to cease "displaying, manufacturing, distributing or selling" sexually explicit materials" (*Roe*, 543 U.S. at 79). When Roe continued, he was dismissed from the department and filed suit alleging violation of his First Amendment right to free speech. The Court found that Roe's actions brought the mission of the department and the "professionalism of its officers in serious disrepute" (*id*. at 81). The Court found that Roe's speech did not qualify as a matter of public concern failing the threshold test and therefore the *Pickering-Connick* balancing test did not apply.

In *Marquardt v. Carlton* a case involving an EMS Captain's alleged "incendiary comments" on his private Facebook page regarding the death of Tamir Rice, the Sixth Circuit Court of Appeals found the comments to be on matter of public concern but remanded the case to the district court to determine "whether Marquardt's free speech interests outweigh the interest of the Cleveland EMS in the efficient administration of its duties" (*Marquardt*, 971 F.3d 546 at 553). However, the simple act of posting work related content to an otherwise

personal social media account does not itself create a nexus. In *Lindke v. Freed*, the Sixth Circuit Court of Appeals held that a city manager did not "transform his personal Facebook page into official action by posting about his job" (Lindke, 37 F.4th at 1207). The Court continued, "Freed did not operate his page to fulfill any actual or apparent duty of his office. And he didn't use his governmental authority to maintain it. Thus, he was acting in his personal capacity—and there was no state action" (*Id*.).

Picketing

The discipline of public employees has also been upheld by the courts for off-duty and off-premises picketing that caused disruption. Teachers in Nassau County New York legally parked their cars on a public street in such a manner while picketing as to obstruct the morning drop-off of children at a middle school. The way their vehicles were parked caused a traffic jam forcing parents to drop off children in the middle of the street, between parked cars, and caused several teachers to be late forcing school officials to scramble to provide homeroom coverage so students were not left unsupervised. Some teachers were disciplined for participation in the picketing and later filed suit alleging violation of their First Amendment rights. Applying the *Pickering-Connick* balancing test, the New York Court of Appeals concluded that the teacher's interest to engage in protected speech in the manner that was employed was "outweighed by the school district's interest in safeguarding students and maintaining effective operations" at the school (*Santer v. Bd. of Educ. Of E. Meadow Union Sch. Dist.).* The Court found that the teachers created a potential and substantial risk to student safety and actual disruption of the school environment.

Also in New York, in response to Mayor Dinkin's support for an all-civilian review board to review police misconduct, City police officers protested on the steps of city hall then moved their protest to the Brooklyn Bridge where they blocked traffic like the protest activities of the teachers in *Santer*. The officers were docked ten vacation days as discipline for "conduct unbecoming an officer" resulting from their participation in the protest. The officers filed suit alleging violation of their First Amendment rights. A federal district judge dismissed the case holding the officers had not provided concrete evidence that they were discriminated against because of their speech. The Second Circuit upheld the decision of the lower court (McKinley, 1995).

Speech not Intended for any Third Party

Speech not intended for public dissemination is a problem that government as an employer must also face. Duke a police officer posted on his Facebook page "It's time for the second revolution" accompanied by the image of a confederate flag (*Duke v. Hamil*). Duke was not on duty when the post was made, and his profile did not identify him as a police officer. Duke intended only those with direct access to his page such as close friends to view the post. He removed the post within one hour but within that time someone provided the image to an Atlanta television station. Though the department had no social media policy at the time, the Chief demoted Duke from his position of Deputy Chief to Detective and reassigned him to the less desirable morning shift. Applying the *Pickering-Connick* balancing test the district court held that Duke was speaking as a citizen on a matter of public concern because it was intended to express disapproval of elected officials. However, balancing Duke's rights against the interest of the department the court held that police departments have "particular interest in

maintaining a favorable reputation with the public" and because Duke was Deputy Chief his conduct reflected on the department's reputation more significantly than conduct of lower ranking officers (*Duke* 997 F.Supp.2.d., at 1302). Because the speech could impede the Department's ability to perform efficiently, Duke's speech and demotion were not afforded First Amendment protection. The Court also admonished that this case illustrates the "gamble individuals take in posting content to the internet and the frequent lack of control one has over its further dissemination" (*Id*.). The case of *Gresham v. City of Atlanta* is another example where the Court warned of the risk of dissemination of semi-private messages concluding that "Plaintiff's Facebook post was "set to private," but was available for viewing by an unknown number of the Plaintiff's "friends," who of course could potentially distribute the comment more broadly" (*Gresham, 542 F. App'x 817* at 6).

Artistic Expression, or is it?

Artistic expression also presents itself as an issue in public employment. Robert Berger a Baltimore police officer was a successful off-duty entertainer with part of his act being the impersonation of Al Jolson which he performed in blackface (*Berger v. Battaglia*). After complaints from some members of the black community the department ordered Burger to cease performing publicly in blackface. Berger filed suit and the district court found that his performances constituted a matter of public concern under *Pickering* but the potential disruption to the department weighed in the department's favor under the *Pickering-Connick* balancing test. The Fourth Circuit reversed the holding of the lower court. The Fourth Circuit agreed with the lower court that Berger's speech was a form of artistic expression unrelated to his work as a police officer and should be afforded the same protection as "accorded

comparable artistic expression by citizens who do not work for the state" (*Berger,* 779 F.2d at 999). However, diverging from the lower court's opinion, the Fourth Circuit found there was no internal disruption but only external disruption by third party persons reacting to the speech. The Court held that threatened external disruption by others reacting to a public employee's speech is not sufficient grounds "to serve as justification for public employer disciplinary action directed at the speech" (*id*. at 1001). For the foregoing reasons the Court concluded that Berger's speech was constitutionally protected. Petition for *certiorari* denied 476 U.S. 1159 (1986).

Parodies and Mockery

Public employees at times resort to mockery and creating parodies of others which is the genesis of *Locurto v. Giuliani*. In this case one NYPD officer and two FDNY firefighters participated while off-duty in a Labor Day parade on a float mocking stereotypes of African Americans. The float garnered extensive media attention. All three were terminated from their positions with the City of New York and filed suit alleging retaliation for exercising their First Amendment rights. The district court entered judgment in favor of the three plaintiffs holding their termination was in retaliation for their speech. The Second Circuit reversed concluding, that even assuming the plaintiffs were speaking on a matter of public concern (the prospective integration of a predominantly white community), that the plaintiffs were terminated based on reasonable concern for potential disruption by a loss of community trust and perpetuating a perception that the Departments were racially insensitive which outweighed the plaintiff's individual expressive interests.

But can public employers legally regulate employee's off-duty activities at a Halloween costume party? Yes, according to the Eighth Circuit Court of Appeals based on the fact pattern in the case of *Tindle v. Caudell* where an off-duty police officer attended a Halloween party at the Fraternal Order of Police Lodge dressed in black face, bib overalls and carrying a watermelon. African American officers were offended and complained to the chief of police who suspended Tindle for 30 days for violating a department rule prohibiting the ridicule, mocking, taunting, or deriding of any person. Tindle filed suit alleging violation of his First Amendment rights. The Court held that because Tindle stated during an administrative hearing that he was just having fun, he failed to meet the burden of showing his speech was a matter of public concern under *Pickering*. Though the court did not need to consider the *Pickering-Connick* balancing test it did so anyway holding it weighed in the department's favor due to the possible disruption of race relations, discipline, and harmonious working relationships in the department.

Casual-Chit Chat

Trejo a non-tenured university professor's employment was terminated after an investigation conducted by the university revealed that Trejo had made off-color, course and derogatory language including "vulgar and disgusting comments and jokes about women, while in the presence of colleagues and graduate students at an academic conference (*Trejo v. Shoben*, 319 F.3d at 882). Trejo's speech offended those present and was characterized as "out of control" and "veiled sexual solicitations directed at the female graduate students in the group" (*Id.*) Trejo filed suit claiming First Amendment and Due Process violations. Citing *Swank*, the Seventh Circuit Court of Appeals held that "Casual chit-chat between two persons or

otherwise confined to a small group . . . is not protected under the First Amendment (*Trejo,* 319

F.3d at 887), (internal quotation marks omitted). Continuing, the Court held that Trejo was

terminated due to "his lack of professionalism, poor judgment, and insufferable behavior

around his colleagues and fellow graduate students and disrupted the educational process and

tarnished the University's good name" (*Trejo,* 319 F.3d at 890).

Print and Broadcast Media

Dixon, an interim Associate Vice President of Human Resources at the University of

Toledo authored an op-ed for the Toledo Free Press in response to the Editor-in-Chief's

editorial on gay rights where he compared the gay rights movement with the civil rights

movement. Dixon, without identifying her official position at the university took offense to the

editorial and in summary stated being black is not a choice while being homosexual is. As a

result of the op-ed Dixon was placed on paid administrative leave and was eventually

terminated because her op-ed was in contradiction with the policies and core values of the

University's strategic plan. Dixon filed suit for First Amendment retaliation and the district court

granted defendants motion for summary judgment. On appeal the Sixth Circuit held the district

court's application of the presumption set forth in *Rose v. Stephens* was proper. The Rose

presumption dictates that "where a confidential or policymaking public employee is discharged

on the basis of speech related to his political or policy views, the *Pickering-Connick* balance

favors the government as a matter of law" (*Rose,* 291 F.3d at 921). Because Dixon held a policy

making position with the University, and her op-ed column spoke to policy issues related

directly to her position at the University, the University's interests outweighed Dixon's interests

as a matter of law and the Sixth Circuit affirmed the district court's grant of summary judgment

for the defendant's. The U.S. Supreme Court denied a petition for writ of *certiorari* on October 7, 2013 (12-1402).

An interesting question of law was raised in *Brown v. Disciplinary Comm. of Edgerton Vol. F.D*. The question of law pertained to whether a volunteer firefighter lost anything valuable enough to him give him standing to sue for termination. The Court held that because the firefighter would forgo a $700 annual pension after twenty-five years of service that "Brown had concrete interests at stake in his position with the Department, and he suffered injury in fact" (*Brown*, 97 F.3d 969 at 973) giving him standing. Brown was suspended for 6 months for contacting a reporter and expressing his displeasure with a name change of the fire department. The Court held the Brown's speech was on a matter of public concern and was protected by the First Amendment.

In a case involving broadcast media, a non-tenured teacher (Doyle) called a radio station and provided them with a new teacher dress code implemented by school administrators (*Mt. Healthy City Sch. Dist. V. Doyle).* The following year, Doyle's contract was not renewed in part for contacting the radio station. Balancing the rights of Doyle and the school district, the Supreme Court relying on *Pickering* held that Doyle's telephone call to the radio station was "clearly protected by the First Amendment" (*Mt. Healthy City Sch. Dist*., 429 U.S. at 283).

Prior Restraint

The headline reads: "Atlanta to Pay $1.2 Million to Former Fire Chief After Firing Him for His Biblical Beliefs" (Warren, 2018). Former Atlanta Fire Chief Kevin Cochran, in his spare time, wrote a guidebook for Christian men. Thereafter Cochran was suspended by the City of Atlanta and later fired for not receiving prior permission from his supervisors and the City Board of

Ethics before writing and publishing the book. Cochran filed suit claiming violation of his First Amendment rights (*Cochran v. City of Atlanta*). There was a host of complex factual issues related to the case that space does not permit to be recounted here. About Cochran's free speech retaliation claim, the district court applied the *Pickering-Connick* balancing test and found the book addressed a matter of public concern, but the balance weighed in favor of the city because the book was disseminated to some in the workplace and there were potential Title VII implications. However, the Court found the City's pre-clearance rules had the potential for stifling speech that far outweighed the unsupported assertion of harm constituting a prior restraint and that the rules "invite unbridled discretion" in their interpretation and application (*Cochran 289 F.Supp.3d 1276* at 1302).

Poorly crafted social media policies may also establish prior restraint (*Liverman v. City of Petersburg).* Two Petersburg police officers while off duty, exchanged posts on Facebook regarding their displeasure with rookie cops becoming instructors and patrol supervisors. The Chief was informed of the exchange and determined the statements made by the officers violated the department's social networking policy, specifically the negative comments provision. Briefly the provision states that "negative comments on the internal operations of the bureau, or specific conduct of supervisors or peers that impacts the public's perception of the department are not protected by the First Amendment" (*Liverman,* 844 F.3d at 3). Both officers received an oral reprimand and six months' probation. A few weeks later the Chief amended the promotional qualifications excluding officers from the promotional process who were on probation. Both officers applied for open sergeant positions and were notified they were ineligible due to being on probation. As a result, both officers filed suit alleging violation

of their First Amendment rights. The Fourth Circuit ruled in favor of the officers finding the Department's social networking policy unconstitutionally overly broad and that it "squashes speech on matters of public import at the outset" (*Liverman, 844 F.3d* at 12). The Court held the discipline received by the officers pursuant to the social media policy was unconstitutional.

Methodology

The methodology used in this research is document analysis which is a qualitative research methodology. "Document analysis is a systematic procedure for reviewing or evaluating documents—both printed and electronic (computer-based and Internet-transmitted) material" (Bowen, 2009, p.27). Benefits of document analysis include being more efficient and less time-consuming than other research methods, availability of documents in the public domain, documents tend to be stable over time, with exactness of detail, broadness of time, events, and settings (*Id.*).

The documents analyzed for this research consist of U.S. Federal Appellate Court opinions accessed electronically by computer via the Internet using the Nexis Uni search engine. Because of the considerable number of cases to draw from particularly at the federal circuit court level, and the voluminous number of pages contained in the opinions, data reduction is necessary. Accordingly, discussion of court opinions is limited to the pertinent facts, the question of law, the holding of the court and the court's rationale. Research focuses on recent cases except where older cases still stand as controlling case law. "Engaging in data reduction process is very helpful in order to edit the data, summarize it, and make it presentable" (Mezmir, 2020, p.18).

Discussion

The Supreme Court's holdings in *Pickering*, *Connick* and *Garcetti* have established a foundational framework to assist public administrators and courts in defining the fine line that grants public administrators the authority to regulate off-duty speech of public employees. In *Pickering* the Court held that absent proof of false statements knowingly or recklessly made, public employees speaking as citizens on matters of public concern are afforded First Amendment protection. However, other speech by public employees including job related speech is not universally afforded automatic protection. The *Connick* Court held that even when speaking on a matter of public concern, the employee's interest must be balanced with the public employer's interest in promoting efficiency in the delivery of public services. Because what constitutes a matter of public concern or a material disruption to the public employer are questions of law to be answered by the courts, public administrators must be knowledgeable of case law and rely on competent legal counsel and review instances involving speech on a case-by-case basis.

The courts have upheld government's authority to regulate off-duty speech of public employees where said speech is not on a matter of public concern, or causes material disruption, even if on matter of public concern. For example, in *San Diego v. Roe* the Court held that Roe's expressive speech contained in lewd and sexually explicit videos sold on the internet did not qualify as a matter of public concern, was immoral and potentially disruptive to his employer. Conversely, an entertainment performance by an off-duty police officer impersonating Al Jolson was held to be protected speech as it was not materially disruptive to the employer (*Berger v. Battaglia*). But in *Tindle* a police officer's Halloween costume that

offended African Americans, and by his own admission was just "having fun" and was not making a political or social statement was not a matter of public concern. Speech that starts as a matter of public concern then morphs into a personal grievance is problematic. A police officer's speech on social media that began addressing a matter of public concern but evolved into a rant and personal grievance against the police chief, did not qualify as a matter of public concern (*Graziosi v. City of Greenville Mississippi*). Even when on a matter of public concern, balancing shifts to the employer when public employees in policy making positions, are speaking on policy issues related to their position (*Dixon v. University of Toledo; Duke v. Hamil; Rose v. Stephens*). Various modes of communication including social media serve as outlets for public sector employees to air grievances and express opinions. However, the medium over which the speech is communicated is inconsequential as the impact of the speech is paramount. Much like claims of sexual harassment it is not the intent of the message but its impact.

Regarding impact of disruptive speech, government as an employer need not allow disruption of the workplace and working relationships to occur before acting (*Connick v. Myers; Gresham v. City of City of Atlanta*). The Court has given substantial weight to the government as an employer's "reasonable predictions of disruption, even when the speech involved was on a matter of public concern" (*Waters* 511 U.S. at 673-674). Particularized speech that pertains to a matter of public interest (*Dunn*) but creates a material or substantial disruption is not afforded First Amendment protection. The courts have upheld disciplinary action against public employees for off-duty speech that caused or threatened to cause material disruption in the public workplace (*Gresham v. City of Atlanta*; *Duke v. Hamil*; *Locurto v. Giuliani; Graziosi v. City*

of Greenville Mississippi; Kirkland v. City of Marysville, Tenn.; San Diego v. Roe). As well, the courts have held that speech not intended to be communicated to third parties does not guarantee First Amendment protection. Posts to Facebook set to private that become public and cause disruption under the *Pickering-Connick* balancing test have not been afforded First Amendment protection (*Gresham v. City of Atlanta*; *Duke v. Hamil*).

Some courts have held that before public administrators have authority to regulate off-duty speech, a jurisdictional test must establish a link between the speech and the employer. There are several ways that off-duty speech may be linked to the employer. Cases where various forms of jurisdictional tests have been applied include *San Diego v. Roe* and *Dixon v. University of Toledo*. However, jurisdictional tests often create confusion and lack clarity, and as Butwin (2018) opines, the tests are "poorly defined, confusing, inefficient and redundant" (p. 690).

"The government's interest in effectively and efficiently achieving its goals is elevated when it acts as an employer compared to a sovereign" (*Waters*, 511 U.S. at 675). However, overly broad bans that chill speech before it happens through prior restraint are generally unconstitutional. Such bans in public sector employment generally present themselves in the form of policies or work rules. A Case in point is the pre-clearance rule for outside employment that the City of Atlanta applied to the Fire Chief's writing of a book. The court held that facially, and as applied, the policy had potential for stifling speech that far outweighed the unsupported assertion of harm, constituted a prior restraint and "invited unbridled discretion" in the City's interpretation and application of the policy. And, in *Liverman v. City of Petersburg,* the court

found the City's social networking policy unconstitutionally overly broad and squashed speech on matters of public import at the outset.

The right to assemble and associate peacefully to petition for a redress of grievances is guaranteed by the First Amendment and protected by the Fourteenth Amendment (*Edwards v. South Carolina*). Yet, this does not grant protestors the right to risk the safety of others or create substantial disruption. The courts have upheld the discipline of teachers for picketing activity that created a potential and substantial risk to student safety and actual disruption of the school environment and the discipline of police officers for protesting on the Brooklyn Bridge that blocked the bridge and created disruption to the flow of traffic (*Santer v. Bd. of Educ. Of E. Meadow Union Sch. Dist.*; McKinley, 1995).

Artistic expression may or may not be protected speech and requires a case-by-case analysis. An off-duty entertainment performance by a police officer impersonating Al Jolson was held to be protected speech (*Berger v. Battaglia*). On the other hand, participation by off-duty public employees in a parade and Halloween party where the participants mocked stereo types of African Americans was held to be materially disruptive and not afforded First Amendment protection (*Locurto v. Giuliani; Tindle v. Caudell*).

Limitations

How documents are interpreted can be a limitation of the document review methodology because as the gap between reader and author widens there is potential for multiple perceptions and viewpoints. Also, because data reduction was necessary in this inquiry something could be lost by choosing one case over another for analysis or by synthesizing the selected cases. There is also state law and state court decision on this area of law that have not

been addressed by this research. Because First Amendment rights of freedom of speech particularly regarding social media is an evolving area of law, the cases presented and discussed herein may be subject to change in the future, either through the appeals process or by being overruled. Other limitations include documents were developed for purposes other than research, some documents are difficult to retrieve, and biased selectivity can be a factor (Bowen, 2009).

Recommendations

Several Supreme Court cases provide First Amendment guidance for government as an employer regarding employee speech. Public employees speaking as citizens on matters of public concern are generally afforded First Amendment protection (*Pickering*) while speech related to an employee's job is not afforded protection (*Garcetti*), nor is speech related to personal grievances or that causes disruption in the efficient delivery of public service (*Connick*; *Graziosi*). Expressive speech that does not fall within any of the exceptions is generally protected speech. The right to assemble and associate, for example non-disruptive picketing and protesting are protected by the First Amendment and must not be prohibited by ordinance or policy. Prior restraint of public employee speech generally violates the First Amendment, (*U.S. v. National Treasury Employees Union*). Based on case-law guidelines and research conducted the following recommendations are made:

- Public administrators need to draft an off-duty conduct policy addressing off-duty speech that conforms to current case law.

- Because social media is a common mode of employee communication a well-crafted social media policy must be established.

- Polices must not create a prior restraint that chills freedom of speech at the outset on matters of public import.

- Policies need to prohibit speech that is sexually lewd, threatening, harassing, discriminatory or disruptive in nature.

- Policies must be communicated to employees.

- Public administrators with the assistance of legal counsel must stay abreast of evolving First Amendment case law related to public employee speech.

- Because what constitutes a matter of public concern or material disruption, is a question of law, matters involving public employee speech must be addressed on a case-by-case basis with guidance provided by legal counsel.

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