

A thin line between invincibility and vulnerability: The interplay among engagement,
exhaustion, and resilience

by

Stacy Ann Stoffregen

B.S., Minnesota State University, Mankato, 2013
M.S., Kansas State University, 2019

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Psychological Sciences
College of Arts and Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

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Abstract

This study focuses on first responders and their experience with work engagement, emotional exhaustion, and resilience over a three-month span. Drawing on Conservation of Resources theory and Job Demands-Resources model, the study examines the interplay between work engagement, emotional exhaustion, and resilience. Path analysis was conducted on the hypothesized model. Results show satisfactory fit and most of the hypotheses were fully or partially supported. Results showed (1) support for the stability of each respective study variable over three months; (2) emotional exhaustion consistently held a significant negative relationship with future levels of work engagement; (3) the relationship between work engagement and future reduced levels of emotional exhaustion was only partially supported; (4) the relationship between resilience safeguarding against future emotional exhaustion was also only partially supported. These findings highlight the need to prevent and manage emotional exhaustion as it can exacerbate other aspects of first responders' psychological connection to their work. Theoretical and practical implications are discussed as well as limitations and future research directions.

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Approved by:

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Dedication

To my mom, Sharon Stoffregen, for encouraging and nurturing my curiosity and interest in science. I could not have done this without your support.

Chapter 1 - General Introduction

In the U.S., it is estimated 240 million calls are made to 911 annually (National Emergency Number Association, 2021). First responders may refer to Emergency Medical Service (EMS) professionals such as paramedics and Emergency Medical Technicians (EMT), who perform an important role in our society as they respond to emergencies and assist in prehospital care. The purpose of a first responder is to be the first to arrive at a variety of emergencies to assist victims, such as car accidents, medical emergencies, and natural disasters. While responding to emergencies, first responders also provide emotional support to emergency victims and console their families. First responders work in a high-stress and high-risk environment, where they are exposed to multiple traumatic events as they respond to numerous calls throughout their shift. Further, their job presents occupational dangers such as combative patients, physically demanding responsibilities, and exposure to harmful substances. Boland et al. (2018) examined critical incidents of EMS professionals and found 43% of their sample (n = 209) reported they had been threatened with a weapon/gun and 68% had been assaulted by a patient at least once in their career. First responders also report having little time for recovery between emergencies (Lawn et al., 2020). To a large extent, first responders have both a physically and emotionally demanding occupation.

The stressors inherent to the job demands first responders have in providing prehospital care may increase the likelihood of experiencing burnout and lead to undesirable outcomes such as reduced occupational safety performance (e.g., Smith et al., 2018) and turnover (e.g., Fragoso et al., 2016). The nature of first responders' work is high-stress and high-risk where they are

exposed to numerous traumatic events, which may make them more susceptible to experiencing burnout.

Resilience is fundamental in human flourishing, especially during times of adversity. Resilience may be particularly essential in demanding occupations, such as first responders. First responders represent a unique demographic in that their job serves as a helping profession that encounters unpredictable and potentially traumatic events. Resilience has been identified as a stable, yet malleable, construct (Fisher et al., 2019; Luthans, 2002) and is worthy of examination within the context of first responders, especially as the development and bolstering of resilience may help to protect first responders from some of the negative effects of their demanding profession.

Background

Burnout is a response to chronic emotional and interpersonal stressors on the job over an extended period. Individuals experiencing burnout are not merely overwhelmed or fatigued but are also experiencing a psychological disconnect with their work that has implications for the individual, the organization, and the people they serve. Burnout is significantly affected by job demands and resources and has been found to be relatively stable over time (Schaufeli & Buunk, 2003). First responders have demanding jobs and research has shown they are vulnerable to burnout (Essex & Scott, 2008; Pike et al., 2019). It is estimated that approximately one-third of paramedics and a quarter of EMTs experience burnout (Crowe et al., 2018). In another sample of first responders, consisting of paramedics, EMTs, and ambulance dispatchers, Boland et al. (2018) reported that 18% of their sample were affected by burnout. Burnout is associated with a host of negative organizational outcomes such as reduced performance (Taris, 2006), absenteeism (Salvagioni, et al., 2017), and workplace injuries (Leiter & Maslach, 2008).

Therefore, employees experiencing burnout are of concern, especially for first responders who work in high-stakes situations of responding first to emergencies. The opioid epidemic and the COVID-19 pandemic have added to the workloads of first responders, which may further increase their susceptibility to burnout. The prevalence of burnout among first responders is concerning for their physical and mental well-being.

While research has examined the prevalence of burnout (Boland et al., 2018; Crowe et al., 2018) and job demands and resources that are associated with first responders experiencing burnout (Crowe et al., 2020), less is known about first responders' experience with work engagement. A study conducted by Fragoso et al. (2016) examined predictors and outcomes of burnout and engagement among nurses and EMS personnel. Their results show that job resources were a stronger predictor for engagement than job demands and that burnout was more strongly associated with job demands than resources. Work engagement is characterized by the dimensions of vigor, dedication, and absorption, which one might find appealing qualities in first responders. The nature of a helping profession, such as that of first responders, might create an environment that is both demanding yet intrinsically rewarding which may in turn foster engagement. Moeller et al. (2018) conducted a longitudinal study on a representative sample of the U.S. workforce and found that workers can be simultaneously engaged and experiencing burnout. This raises the question, why engagement and burnout co-occur in some individuals but not in others. Research has yet to examine the reciprocal relationship between burnout and engagement over time in first responders. Additionally, a deeper understanding of the contextual variables associated with the burnout and engagement relationship is needed.

Resilience is an active process that includes positive adaptation when faced with significant adversity (Luthar et al., 2000). Research has shown that resilience can be developed

(Luthans, 2002a) and that resilience may vary by context and time (Davydov et al., 2010). Our understanding of how resilience develops as an unfolding process at the individual level is still evolving. Resilience may act as a safeguard against the negative outcomes that are associated with high demands, such as burnout, and may promote work engagement. Research has yet to examine the reciprocal relationship between resilience, burnout, and engagement.

Problem Statement and Purpose

First responders are an understudied population in examining resilience in the workplace (Kossek & Perrigino, 2016). First responders face unique job demands and resources, especially during the COVID-19 pandemic when important job resources, like adequate personal protective equipment, adequate time for rest and recovery, and social support for supervisors and peers may be scarce. High engagement and burnout can co-occur (Moeller et al., 2018) and highly engaged workers are at risk of experiencing burnout over time (Junker et al., 2020). Resilience may function as a coping mechanism and safeguard in protecting the overflow of occupational demands. Resilience is a personal resource that is linked to coping and the ability to stimulate positive emotions during negative circumstances (Tugade et al., 2001) as well as the ability to resist and recover from stressors (Ong et al., 2006). Therefore, resilience may act as a safety barricade in protecting the individual against expanding occupational demands. The present study examined the interplay among burnout, work engagement, and resilience over time. Research has yet to examine the interplay between resilience, burnout, and engagement. Further, this study intended to expand our understanding of the contextual variables, specifically resilience, associated with burnout and work engagement.

The purpose of this study was threefold: first to examine the relationship between resilience and, respectively, work engagement and emotional exhaustion over time, second to

examine the relationship between engagement and emotional exhaustion over time, and third to examine the stability of each respective construct, work engagement, emotional exhaustion, and resilience, over three time points.

Chapter 2 - Literature Review

Resilience

Resilience is fundamental to understanding how employees successfully handle adversity. Generally, resilience is viewed as an advantageous characteristic for organizations and employees to possess for managing various types of hardship. Resilience has become increasingly valuable to both personal and job effectiveness to the extent that individuals must be “resilient” in all aspects of life. We live in a rapidly changing time where individuals are exposed to major events like natural disasters, terrorism, and global pandemics as well as everyday occurrences such as dealing with new technology or a difficult work colleague. Resilience is becoming essential for organizations and employees, especially regarding the expanding uncertainties that are associated with the changing nature of work and the workforce across employment contexts (Kossek & Perrigino, 2016).

The word resilience comes from the Latin verb *resilire*, or “to leap back” and has historically been associated with science and mathematics (Fletcher & Sarkar, 2013). Lazarus (1993) provided an example of resilience in metals, where the resilient metal can bend and bounce back without breaking when stressed. Lazarus used it as an analogy for the current state of resilience research which focused on personality traits and the coping processes that help some resist negative outcomes of stress more so than others. In psychology, studies of resilience began in the developmental and clinical psychology fields, where researchers sought to understand why some children were able to overcome and thrive despite facing adversity (Masten, 2001). Through this research, resilience was found to be an ordinary phenomenon resulting from normal or basic human adaptation processes (Masten, 2001).

Since psychologists began studying resilience, our understanding of human functioning in demanding situations has advanced quickly. Resilience has been examined across many contexts, such as business organizations (e.g., Shoss et al., 2018), education (e.g., Chakradhar et al., 2018), and military training (e.g., Falon et al., 2021). While resilience has been studied in numerous contexts, a considerable problem in conducting resilience research is the vast discrepancies in the way resilience has been defined and conceptualized. Examining resilience in regard to organizations and the workplace, resilience has been used to describe organizational characteristics as well as employee characteristics. Resilience research in the workplace draws upon the ideas of positive psychology, which focuses on human strengths (Seligman & Csikszentmihalyi, 2000; Luthans, 2002). At the organizational level, resilience has been used to describe the innate characteristics of organizations that can respond more quickly, recovering faster or developing unusual ways of conducting business under adversity than other organizations (e.g., Linnenluecke, 2017; Sutcliffe & Vogus 2003; Vogus & Sutcliffe 2007). Resilience at the employee level has been used to refer to employees that are able to bounce back, and even succeed, in the face of adversity (e.g., Luthans et al., 2010; Shin et al., 2012).

Adversity & Advancement

While resilience has numerous operationalizations, most definitions agree that resilience consists of two core components, adversity, and positive adaptation (Fletcher & Sarkar, 2013; Masten, 2001). Although the majority of researchers agree demonstrations of resilience require both evident adversity and positive adaptation, there are inconsistencies in the description of adversity and adaptation which has led to confusion regarding their meaning (Fletcher & Sarkar, 2013).

Regarding adversity, Luthar and Cicchetti (2000) apply a threshold-dependent definition of adversity in stating that adversity “typically encompasses negative life circumstances that are known to be statistically associated with adjustment difficulties” (p. 858). Other researchers suggest resiliency may differ by contextual severity, such as in the form of a singular and high-intensity situation (e.g., crisis), or it may come in the form of low-intensity but high-frequency or high-duration circumstance (e.g., various forms of work stress) (e.g., Davydov et al., 2010; Fisher et al., 2019). Both forms of adversity create a challenge as well as a threat to one’s performance and wellbeing (Richardson, 2002).

Luthar and Cicchetti (2000) define positive adaptation as “behaviorally manifested social competence, or success at meeting stage-salient developmental tasks” (p. 858). Stated differently, positive adaptation occurs when one returns to a steady state of wellbeing or bounces beyond it (Britt et al., 2016; Luthar et al., 2000). In assessing positive adaptation, the indicators used need to be relevant and appropriate to the adversity examined regarding the domain and criteria used to assess the occurrence of positive adaptation (Luthar, 2006; Luthar et al., 2000). For example, in child development indicators of positive adaptation for at risk toddlers include behaviors reflecting secure attachments to their caregivers and an autonomous self (Luthar et al., 2000). In occupational settings, indicators of positive adaptation may include work engagement, motivation, and safety performance.

Conceptualizations of Resilience

While most researchers agree on the main antecedent (adversity) and the main consequence (adaptation) of resilience, there is less agreement in the literature concerning conceptualizing resilience. This proposes a major roadblock in researching resilience as there are numerous definitions researchers have used to conceptualize resilience, such as a stable

personality, a trait-like developable capacity, or a process (Kossek & Perrigino, 2016; Richardson, 2002).

The trait perspective conceptualizes resilience as a stable personal characteristic or a grouping of personal strengths (Hartmann et al., 2020). Defining resilience in terms of a trait leads to the belief that resilience is a quality that one either possesses or does not. This is problematic and potentially promotes the notion of victim-blaming. Therefore, researchers have argued against defining resilience as a trait or individual capacity (Luthar et al., 2000). Sutcliffe and Vogus (2003) explain this well: “Scientifically representing resilience as a personal attribute is risky because it paves the way for perceptions that some individuals simply do not ‘have what it takes’ to overcome adversity, curtails our understanding of the underlying processes, and may even repress possible interventions” (p. 96).

The capacity perspective conceptualizes individual resilience as a state-like attribute that is stable over time but is also malleable in the long run. Using this perspective, resilience is developable through training and interventions (Luthans, 2002). This conceptualization is included in the definition of psychological capital (PsyCap), a popular concept among positive organizational behavior researchers (Luthans et al., 2007). PsyCap is a set of resources, composed of hope, self-efficacy, resilience, and optimism, that employees can draw from. PsyCap defines resilience as “the developable capacity to rebound or bounce back from adversity, conflict, failure or even positive events, progress, and increased responsibility” (Luthans, 2002a, p. 702). The four factors of PsyCap have been examined in research as a composite and as independent predictors of various outcomes.

Last, the process perspective views resilience as a developing progression in response to various adversities and results in demonstrating positive adaptation (Hartmann et al., 2020). In

this perspective, resilience outcomes can be affected by both resilience mechanisms (protective factors) and resilience promoting factors. Additionally, the effects of the protective and promotive factors may vary by context and time, such as throughout a situation or one's lifespan. Therefore, an individual may react positively to adversity at one point in their life, but this does not necessarily mean that person will always react positively to adversity throughout their life (Davydov et al., 2010).

This study defines resilience as a "dynamic process encompassing positive adaptation within the context of significant adversity" (Luthar et al., 2000, p. 543). The present study uses the process conceptualization of resilience as the process perspective allows us to look at temporal and developmental aspects which are important in studying resilience (Fisher et al., 2019). This perspective also allows us to consider contingencies and therefore domain specificity, which is important to researching resilience in the workplace as it has been suggested that resilience, much like other psychological constructs, is domain specific (Kossek & Perrigino, 2016). Further, the process perspective aligns with recent resilience research, which suggests that resilience is a mixture of actions, malleable capacities, and stable, trait-like elements that affect the result of the resilience process (Fisher et al., 2019; Kossek & Perrigino, 2016).

Antecedents of Resilience

Our understanding of how resilience emerges as an unfolding process at the individual level is still evolving. Beyond adversity, research has identified some key areas that are antecedents of resilience. Regarding personality traits, resilience is positively associated with conscientiousness (Paul et al., 2016; Lyons et al., 2015; Wei & Taormina, 2014;) future-orientation (Wei &

Taormina, 2014), openness to experience (Lyons et al., 2015), and emotional stability (Lyons et al., 2015).

Qualitative studies of caring professions (e.g., palliative care nurses, nurses, physicians) have identified that having a sense of meaning or purpose in one's work is associated with resilience (Ablett & Jones, 2007; Cameron & Brownie, 2010; Stevenson et al., 2011). A sense of meaning may provide individuals with direction during uncertain times or when facing adversity.

Additionally, Ablett and Jones (2007) found commitment to one's job was positively linked with resilience. Lyons et al. (2015) studied career resilience, which is the process of overcoming adversity specific to one's career, such as a loss of security, ambiguity with a career path, and difficulties balancing work and non-work roles. They found that being self-directed promoted career resilience; however, contrary to their expectations, being values-driven, having a boundaryless mindset, and a preference for organizational mobility reduced resilience.

Personal resources have also been identified to aid in the development of resilience. Cameron and Brownie (2010) conducted a qualitative study on nurses and found expertise related to the job helped promote resilience. Guo et al. (2017) studied nurses in China and found self-efficacy was positively associated with resilience while Lyons et al. (2015) found self-efficacy was positively linked to career resilience. Qualitative studies have also found that establishing a work-life balance is associated with one's resilience (Cameron & Brownie, 2010; Meek et al., 2003). Establishing boundaries provides time for rest and social activities during one's personal time, which may help to refill depleted resources (Meek et al., 2003). Kinman and Grant (2011) examined factors that are associated with social workers' resilience and found that emotional intelligence, reflective ability, empathy, and social competence fostered resilience. Additionally, they found resilience was significantly negatively correlated with psychological distress.

The relationship between social support and resilience is more complex and might be dependent on the work context studied. For example, Todt et al. (2018) sought to examine the social support that might foster resilience in innovators. Specifically, they examined software developers, who frequently work on projects that are terminated before they are completed. Their results indicated that social support from their leader and colleagues were strongly related to employees' resilience; however, social support from their family and friends were not significantly related to resilience. Additionally, Kuntz et al. (2017) found social support from colleagues and but not social support from supervisors was significantly related to employee resilience. Qualitative studies provide insight into this relationship. Lamb and Cogan (2016) studied mental health workers and identified that social support allows workers to talk about stressful experiences and work through them. Further, Cameron and Brownie (2010) suggest that having supportive colleagues offers opportunities to debrief and validate their experiences.

Resilience research has also identified work resources that foster resilience. Work resources such as feedback (Kuntz et al., 2017), having reasonable control over one's work or hours (Lamb & Cogan, 2016; Stevenson et al., 2011), knowledge sharing (Malik & Garg, 2017; 2020), and learning culture (Malik & Garg, 2017; 2020) have been positively associated with resilience. Additionally, humble (Zhu et al., 2019) and paradoxical (Franken et al., 2020) leadership styles have been linked to employee resilience. Transformational leadership has also been positively associated with resilience. Sommer et al. (2016) studied an organizational crisis in health care and found that transformational leadership was related to greater levels of positive affect and lower levels of negative affect in employees, which subsequently promoted resilience among team members. Inverse effects were found for the passive form of management-by-exception. Further, Harland and colleagues (2005) found that dimensions of transformational

leadership, specifically, attributed charisma, idealized influence, intellectual stimulation, and individualized consideration, and the contingent reward dimension of transactional leadership were positively associated with employee resilience. Harland et al. (2005) found a negative relationship between the passive form of management-by-exception and employee resilience. Further, they found no relationship between the active form of management-by-exception and resilience.

Outcomes Associated with Resilience

Outcomes associated with resilience include performance, mental health, work attitudes, and change-related attitudes. Luthans and colleagues (2005) examined Chinese factory workers and three factors of psychological capital (i.e., hope, optimism, and resiliency) as well as a composite score of PsyCap and their relationship with performance. Their results show each factor individually and as a composite, respectively, was positively related to supervisor-rated performance. Results examining objective performance and individual factors of psychological capital have found mixed results. Luthans et al. (2007) found objective performance was significantly associated with the resilience dimension of PsyCap with employees in a high-tech manufacturing firm; however, in a sample of insurance service employees, there was no significant relationship between resilience and performance. Thus, the performance and resilience relationship may be domain specific. Additionally, resilient employees are more likely to engage in organizational citizenship behaviors (Paul et al., 2016), engage in extra-role performance (Gupta & Sharma, 2018), and have positive self-evaluations of career success (Wei & Taormina, 2014).

Regarding change, Shin et al. (2012) found that resilient individuals were better able to cope with a changing workplace. Additionally, they found resilience was positively linked to

employees' normative and affective commitment to change and the relationships were mediated by state positive affect and social exchange. Supporting Shin et al. (2012), Malik and Garg (2017) found that resilience was positively related to affective commitment to change.

Resilience has been significantly associated with work attitudes such as job satisfaction (Meneghel et al., 2016; Youssef & Luthans, 2007), career satisfaction (Lyons et al., 2015), work happiness (Youssef & Luthans, 2007), and organizational commitment (Paul et al., 2016; Youssef & Luthans, 2007). Resilient individuals are also less likely to indicate intent to change careers (Carless & Bernath, 2007; Kidd & Green, 2006). Lee and colleagues (2021) studied physical education teachers and found while resilience did not directly relate to turnover intentions, there was a significant indirect relationship where emotional exhaustion mediated the resilience-turnover intention relationship. Additionally, results show resilience was negatively related to emotional exhaustion, which in turn was positively associated with turnover.

Previous research has also supported the notion that resilience is negatively associated with burnout (Cooke et al., 2013; Harker et al., 2016; Meng et al., 2019). Shoss et al. (2018) found convergent support on the buffering effect of resilience when facing job insecurity. They conducted two studies, the first on university employees and the second on a demographic representation of the U.S. workforce. Results from their first study found that resilience mitigated the relationships between job insecurity and emotional exhaustion and cynicism. In their second study, results indicate that resilience alleviated the negative effects of job insecurity on interpersonal counterproductive work behaviors and emotional exhaustion assessed one month later. Further, Al-Hawari et al. (2020) identified a significant negative correlation between employee resilience at Time 1 and emotional exhaustion at Time 2. No direct effects were examined between resilience and emotional exhaustion.

It has been shown that resilience is positively associated with work engagement (Gupta & Sharma, 2018; Malik & Garg, 2020; Wang et al., 2017). Mache et al. (2014) examined predictors of work engagement of German health care professionals. They examined the three dimensions of engagement (vigor, dedication, and absorption) and found that all three dimensions were, respectively, significantly and positively related to resilience. Research on employee engagement and resilience is developing and more research is needed to examine the potential protective effect of resilience to adverse occupational and individual outcomes.

In viewing resilience as a developable capacity or process, researchers have investigated whether it can be enhanced through interventions. Two meta-analyses (Joyce et al., 2018; Vanhove et al., 2016) and a systematic review (Robertson et al., 2015) established that interventions exhibit inconsistent and small to moderate effects on mental health outcomes. Additionally, positive outcomes frequently fail to continue over time (Vanhove et al., 2016). Falon et al. (2021) assessed the efficacy of self-reflection resilience-strengthening intervention on officer cadets and found support for the capability of an intervention that is practical, sustainable, and scalable on self-reflection to enhance resilience in a military training setting.

This study utilizes the process perspective in seeking to examine the role resilience plays in safeguarding first responders against the demands and adversity they face in the workplace. Resilience is a developable capacity and process; therefore, it is worthy to examine if resilience has a significant impact in protecting against the negative effects of high occupational demands. Additionally, viewing resilience as a resource may aid in the promotion of positive organizational attitudes such as work engagement. Specifically, the present study intended to examine the interplay between work engagement and emotional exhaustion, as well as examine

the potential protective effect resilience has on developing emotional exhaustion and promoting engagement over time.

Burnout

Burnout is defined as a “psychological syndrome that develops in response to chronic emotional and interpersonal job stressors” (Maslach & Leiter, 2015, p. 222). Unlike other psychological concepts, burnout was not derived from theory, instead, it was more of a grass-roots phenomenon in which people found it to be a fitting description of a reality many workers were experiencing (Maslach & Leiter, 2016). The term burnout became popular in both mainstream and academia in the 1970s. In academia, Freudenberger (1974) is generally credited for the term burnout through his influential paper on “staff burn-out”. At the time, Freudenberger worked at a free clinic in New York City for drug addicts. Many of his colleagues were young, idealistically motivated volunteers and he noticed that around one year of tenure, many of them experienced a gradual depletion, loss of motivation, and energy toward their job. Freudenberger coined the term burnout, which he borrowed from the illicit drug scene where it describes the effects of chronic drug abuse. Around the same time in California, Maslach (1976) came across the term when interviewing a variety of human service workers. Maslach was interested in how human services workers cope with the emotional arousal of their jobs. In her interviews with California poverty lawyers, they used the term burnout to describe the process of gradual exhaustion, cynicism, and loss of commitment in their coworkers. Maslach and her colleagues adopted the term as it was easily understandable for the subjects of their study, human services professionals. Furthermore, Maslach shifted her research focus to describe this phenomenon (1976).

Early burnout research was qualitative and sought to define the construct, which initially, had many different definitions. Despite the plethora of definitions, common themes were identified such as: burnout happens at the individual level; it is an internal psychological experience that involves feelings, attitudes, motives, and expectations; it is an adverse experience for the individual, such that it involves problems, distress, discomfort, dysfunction, and/or negative outcomes (Maslach et al., 2009). Additionally, there was debate as to whether burnout was captured best by a single dimension or multiple dimensions. The burnout dimension with the most agreement among the literature is that of exhaustion (Maslach et al. 2009).

Burnout was initially believed to be a concept exclusively reserved for occupations in the human services sector. Early definitions that arose from qualitative interviews of burnout reflect this belief. Maslach and Jackson (1981) define burnout as “a syndrome of emotional exhaustion and cynicism that occurs frequently among individuals who do ‘people-work’ of some kind” (p. 99). Based upon years of research, in 1981 Maslach and Jackson developed the Maslach Burnout Inventory (MBI) which has become the most widely used burnout measure (Schaufeli & Buunk, 2003). In their measurement development process, three subscales emerged: emotional exhaustion, depersonalization, and personal accomplishment. The dimension of emotional exhaustion concerns feelings of being overextended emotionally and depleted of emotional resources. Depersonalization refers to the increase of negative, callous, and cynical attitudes toward others, often the recipients of one’s care or service. Finally, personal accomplishment involves the individual feeling a lack of competence and successful achievement in one’s work with recipients (Schaufeli & Buunk, 2003).

Since this conception, burnout has been identified in occupations and sectors outside of human services. As such the MBI has gone through several changes. Maslach and Jackson’s

(1981) initial MBI is now known as the MBI-Human Services Survey (MBI-HSS). In 1986, Maslach and Jackson developed a second version for people working in educational settings, called the MBI-Educators Survey (MBI-ES). In both the MBI-HSS and MBI-ES, the labels for the three dimensions remained the same, describing people who work in occupations where there is close interaction with other people (e.g., patients, clients, students, etc.). The third version of the MBI, the MBI-General Survey (MBI-GS) was developed to meet the increasing need to study burnout in occupations that were not so distinctly people oriented (Schaufeli et al., 1996). The MBI-GS expanded the definition of burnout to refer to one's relationship with the job in general and not exclusively the aspect of personal relationships that may be a part of that job. As such, the three labels of burnout dimensions were redefined as exhaustion, cynicism, and reduced professional efficacy. In the MBI-GS, exhaustion refers to fatigue irrespective of its causes, cynicism describes having a distant attitude toward the job instead of other people, and lack of professional efficacy includes both social and non-social aspects of occupational accomplishment (Schaufeli & Buunk, 2003).

Burnout is a prolonged reaction to incessant emotional and interpersonal stressors in one's job. Individuals experiencing burnout are not merely overwhelmed or fatigued by their work, instead, they have lost a psychological connection with their work, which has implications for their motivation and their identity (Schaufeli & Buunk, 2003). Burnout scores are generally stable over time and require an intervention to alleviate the syndrome (Schaufeli & Buunk, 2003). Research has identified that the dimensions of cynicism and reduced personal accomplishment develop concurrently from emotional exhaustion (Alarcon, 2011; Taris et al., 2005). Stated differently, usually burnout develops in people experiencing exhaustion initially, which then leads to cynicism and feelings of reduced personal accomplishment.

Burnout Antecedents

Burnout research over the last 30 plus years has analyzed and gained a deeper understanding of how individual employees react to their jobs. Surprisingly, the results suggest that social and environmental factors play a larger role in burnout compared to individual factors (Maslach & Leiter, 2015). Burnout is not simply an individual problem, but a problem with the greater work context. Research has been conducted to determine if certain individual differences make one more prone to burnout. Demographic variables have been researched in relation to burnout and the results have been inconsistent with confounding variables (e.g., age, sex, occupation, tenure) that make interpretation difficult at best (Maslach & Leiter, 2015). Consistent findings have come from research on the Big Five personality dimensions, finding a link between neuroticism and burnout (Langelaan et al., 2006; Swider & Zimmerman, 2010). The association between neuroticism and burnout makes sense as neurotic individuals are more emotionally unstable and inclined to experience psychological distress.

Through analyzing research, Maslach and Leiter (1997) identified six situational predictors of burnout: workload, control, reward, community, fairness, and values. These dimensions later became the Areas of Worklife Scale (AWS, Leiter & Maslach, 1999). In 2017, Maslach and Leiter revisited and provided an updated summary of the research on the six situational predictors of burnout. The first predictor, overload, is commonly discussed with regard to burnout and refers to job demands that exceed human limits. A burgeoning workload is related to burnout, especially the dimension of exhaustion (Cordes & Dougherty, 1993; Schaufeli & Enzmann, 1998; Seidler et al., 2014). Work overload, both qualitative and quantitative, contribute to exhaustion by lessening the ability of people to meet the demands of their job. When people are unable to recover from the demands of their job, a critical point occurs.

Meeting an especially demanding event at work, such as a deadline or addressing a crisis, creates acute fatigue, however, this does not necessarily lead to burnout if people are able to recover and experience restful periods at work or at home (e.g., Maslach & Leiter, 2008; Shinn et al., 1984; Sonnentag, 2003). Stated differently, not every work demand will lead to burnout if the employee is able to recover properly.

The next situational predictor of burnout identified by Maslach and Leiter (2017) is control. Previous research has found that greater role conflict has been associated with greater exhaustion (Alarcon, 2011; Cordes & Dougherty, 1993). Role conflict arises when there are conflicting demands placed on an individual and the individual is unable to exercise effective control of their job (Maslach & Leiter, 2017). Role ambiguity, the absence of direction at work, has also been found to have an association with greater burnout (Alarcon, 2011; Cordes & Dougherty, 1993). In a meta-analysis, Alarcon (2011) identified both role conflict and role ambiguity respectively have the strongest relationship with exhaustion, while the other two dimensions of burnout were still significantly associated with both constructs. To prevent burnout, interventions have focused on increasing control over one's work and increasing resources (Sonnentag, 2015).

Maslach and Leiter (2017) acknowledge that rewards (e.g., monetary, intrinsic, social, etc.) also play a role in individual susceptibility to burnout. Research has identified that insufficient rewards (e.g., financial, institutional, social) increase one's susceptibility to burnout (Siefert et al., 1991). Day and Randell (2014) note that recognizing employees' contributions is a low-cost, direct, and effective way to prevent burnout and increase employees' work engagement.

Next, Maslach and Leiter (2017) define community as the overall quality of social interactions at work, such as conflict, mutual support, collegiality, and the ability to work as a team. Burnout research has mostly focused on social support from supervisors, coworkers, and

family members (e.g., Cordes & Dougherty, 1993; Greenglass et al., 1994). Seidler et al. (2014) conducted a systematic review on burnout and psychosocial working conditions, their results suggest that low support, in general, is associated with emotional exhaustion. Greenglass et al. (1994) found that social support acts as a buffer to burnout for teachers, specifically support from family and friends. They did not find evidence for coworker or supervisor support in buffering the effects of job stress and burnout. However, Cordes and Dougherty's (1993) review found that greater perceived social support from supervisors or coworkers is linked to lower levels of all three burnout dimensions.

Fairness is defined by Maslach and Leiter (2017) as the extent to which decisions at work are perceived as being fair and equitable. Maslach and Leiter (2008) conducted a longitudinal study to examine the six proposed predictors of burnout. Their results indicate that individuals experiencing problems with fairness at work (e.g., favoritism, unjustified inequalities, cheating), were reflected in their initial responses to the AWS which acted as an early warning pattern, such that those individuals were more likely to develop burnout over time. Campbell et al. (2013) illustrated the effects of three forms of justice (distributive, procedural, and interactional) and the link between injustice and the development of burnout and consequently turnover. Additionally, Jin et al. (2015) studied organizational justice and job burnout among medical interns in Shanghai. Their results indicate that experiencing injustice has a stronger relation to exhaustion and cynicism than professional efficacy.

The last predictor identified by Maslach and Leiter (2017) is values. Values are what originally attracted people to their job and the motivating connection between the worker and the workplace. There has not been much research in this area, however, research suggests values may have an important role in predicting levels of burnout and engagement (Leiter & Maslach,

2004). In situations where there is value incongruity between the individual's values and the organizational values, the worker is in a situation where they must make a trade-off between the work they want to do and the work they must do. Research has found that value incongruence, as well as work overload, is associated with employees' experience of burnout (Brom et al., 2015; Leiter et al., 2009; Veage et al., 2014). Maslach and Leiter (2017) state that these six areas are not independent of one another, and research has yet to establish if certain areas are more significant predictors of burnout than other areas. For example, work overload suggests there may also be decreased control in one's job.

Burnout Outcomes

Burnout has been identified as a job stress syndrome, where the individual's stress experience is placed within the organizational context of people's relationship to their work (Maslach & Leiter, 2016). Burnout hinders both personal and social functioning which has consequences for the individual and the organization. Previous research has identified burnout's complicated relationship with physical and mental health, such that poor health contributes to burnout and burnout contributes to poor health (Ahola & Hakanen, 2014). In terms of physical health, Toker et al. (2012) found burnout predicted the development of cardiovascular problems among Israelis. Melamed et al. (2006) studied working and appearing healthy adults in Israel and found chronic burnout was linked with the emergence of type 2 diabetes. Salvagioni et al. (2017) conducted a systematic review and found that burnout is a significant predictor of high cholesterol, type 2 diabetes, coronary heart disease, hospitalization due to cardiovascular disorder, musculoskeletal pain, prolonged fatigue, headaches, gastrointestinal issues, respiratory problems, severe injuries, and mortality below the age of 45 years. Toker et al. (2005) illustrated the association of burnout and inflammation biomarkers, as well as the association to both

physical and mental health problems. Furthermore, research has identified burnout is linked to depression and anxiety (Koutsimani et al., 2019).

Burnout has been linked to a myriad of organizational outcomes. Previous research has found that burnout is linked to reduced job satisfaction (Alarcon, 2011; Salvagioni, et al., 2017; Schaufeli & Enzmann, 1998), low organizational commitment (Alarcon, 2011; Schaufeli & Enzmann, 1998), absenteeism (Salvagioni, et al., 2017; Schaufeli & Enzmann, 1998; Swider & Zimmerman, 2010), intent to leave the job (Alarcon, 2011; Goering et al., 2017; Lee et al., 2021; Schaufeli & Enzmann, 1998), and actual turnover (Schaufeli & Enzmann, 1998; Swider & Zimmerman, 2010). Further, Taris (2006) conducted a meta-analysis on burnout and performance, identifying that exhaustion was related to decreased in-role behavior, organization citizenship behaviors, and customer satisfaction. Salyers et al. (2016) conducted a meta-analysis examining the relationship between health care providers and burnout. Their results indicate that health care provider burnout was associated with lower perceived quality of care, reduced patient satisfaction, and reduced perceptions of safety. Aiken et al. (2002) examined patient mortality, patient-to-nurse ratio, and burnout. Their results suggest when nurses had higher patient workloads and were experiencing greater burnout, the greater the risk of patient mortality. Leiter and Maslach (2008) conducted a longitudinal study and found both workload and exhaustion were associated with rates of workplace injuries during the following year. Finally, burnout has been found to be contagious and burnout can maintain itself through social interactions on the job (Bakker et al., 2005b; González-Morales et al., 2012).

Burnout is an important phenomenon to study and understand. The decreased quality of work and the negative physical and psychological consequences of burnout are costly to not only the individual experiencing burnout but also for everyone affected by that person. Interventions to

assuage burnout and encourage its opposite, engagement, can occur at both the personal and organizational levels. Awa and colleagues (2010) conducted a review of burnout intervention programs and confirmed intervention programs have a beneficial effect. Specifically, a combination of person-directed intervention and organization-directed intervention programs had the longest lasting positive effects. At the person-directed level, interventions designed to improve employees' coping abilities, social support, and confidence in their job performance were most successful. At the organization-level, interventions including job redesign initiatives focusing on streamlined procedures and increased job control were most notable.

Burnout and Resilience

There has been little research examining how resilience and burnout are related and interact. Both the resilience and burnout literature demonstrate that positive social support such as friendships, relationships with colleagues, and a supportive environment, are important in developing both phenomena (Treglown et al., 2016). While burnout occurs in situations of prolonged interpersonal and emotional occupational stress, some individuals are able to demonstrate resilience and persevere under tremendous stress. This may be due to the process perspective of resilience, which suggests that an interaction ensues within the environment, where managing resources and negotiating occurs in response to the stressor. Resilience develops from ordinary processes that help to protect the effectiveness of these resource allocation systems. Recent research has sought to examine factors that impact these ordinary processes to gain a deeper understanding of the protective functions they may perform. Treglown et al. (2016) examined the dark side of resilience and burnout among ambulance personnel. They defined the dark side as those personality traits, measured with the Hogan Development Survey, that have the potential to destroy our personal and professional lives when one lets their guard

down. Through structural equation modeling, their results showed that resilience plays both a mediating and moderating role on personality and burnout. Specifically, resilience moderated the relationship between personality and burnout such that diligence reduced an individual's risk of experiencing burnout at high levels of resilience. Further, analysis of the indirect effects showed that resilience fully mediated the relationship between bold personality and burnout. A recent study by West et al. (2020) examined burnout and resilience among physicians and a sample representative of the general U.S. working population. Their results found that U.S. physicians reported greater resilience than the general U.S. working population and that resilience and burnout were inversely related.

The present study aimed to examine the cross-lagged relationship between burnout and resilience in a sample of first responders. While research has demonstrated that burnout and resilience are negatively related, less is known how the two constructs relate over time in a sample of first responders. The process conceptualization of resilience suggests that resilience is domain specific (Kossek & Perrigino, 2016; Todt et al., 2018), such that resilience may vary by situational context. Concerning the work context, Kossek & Perrigino (2016) assert that resilience is dependent upon the individual and the occupation. Additionally, they note different occupations face different occupational tasks, occupational demands, work-life factors, and well-being concerns, from which they suggest resilience may differ by occupational context. Therefore, an examination of burnout and resilience in first responders is worth investigating as this occupation may result in unique relationships between resilience and its protective effect on developing burnout.

Engagement

The concept of engagement initially gained popularity in business and among consultants whereas academics were more cautious to accept the concept (Schaufeli & Bakker, 2010). In business and among consultants, the term engagement was often used as a novel and catchy label that academics believed to define traditional and established concepts (Leiter & Bakker, 2010). The origin of the phrase “employee engagement” is unclear however, it was most likely first coined by the Gallup organization in the 1990s (Buckingham & Coffman, 1999). To date, there are four different definitions of engagement: personal engagement, employee engagement, the engagement to burnout continuum, and work engagement. Employee engagement and work engagement are at times used interchangeably, however, the latter is more specific and thus my preferred term.

Personal Engagement

The prevalence of the term and use of engagement in business and among consultants left researchers wondering if “there is something to it” or if it was merely “old wine in new bottles” (Leiter & Bakker, 2010). Accordingly, the first academic researcher who conceptualized engagement was William Kahn (1990), who examined the circumstances that made employees personally engage or disengage in their work. Kahn defined personal engagement as the “...harnessing of organization members’ selves to their work roles: in engagement, people employ and express themselves physically, cognitively, emotionally, and mentally during role performances” (p. 694). To examine this, Kahn conducted two qualitative, theory-generating studies. The first study examined summer camp counselors and the second study examined employees of an architecture firm. From the results of these studies, Kahn identified meaningfulness, safety, and availability as three psychological conditions that were found to

impact one's personal engagement and disengagement in one's work. Researchers view this perspective of personal engagement as role engagement (Spreitzer et al., 2010).

In Kahn's (1992) theoretical expansion, he introduces the concept of psychological presence or the experience of "being fully present" in one's role. Kahn describes psychological presence as an experiential state that accompanies personal engagement. The three psychological conditions of personal engagement (meaningfulness, safety, and availability) determine the extent to which people are psychologically present and therefore, engaging in their tasks or work roles (Kahn, 1992). May et al. (2004) developed a 13-item scale based on Khan's (1990; 1992) work, that consists of three dimensions: cognitive, emotional, and physical. Schaufeliet al (2002b) criticize that Kahn (1992) presented a comprehensive theoretical model but failed to propose an operationalization of the construct. Additionally, Schaufeli and Bakker (2010) go so far as to deem May et al.'s (2004) engagement measure a scale with limited application.

Employee Engagement

Since Kahn's conceptualization of personal engagement, other definitions of engagement have arisen. Employee engagement is defined by Harter and colleagues (2002) as the "individual's involvement and satisfaction as well as enthusiasm for work" (p. 269). Employee engagement is predominately studied by the Gallup organization. This definition shares agreement with Kahn's personal engagement definition (1990; 1992), in that Harter et al. (2002) suggests employee engagement occurs when employees are emotionally connected to others and are cognitively alert (Harter et al., 2002).

The Gallup organization has created its own measure of employee engagement, the Gallup Workplace Audit (GWA) also known as Q¹², based on more than 30 years of accumulated quantitative and qualitative research (Harter et al., 2020). The Q¹² is an applied

instrument that measures actionable issues for management to address. The current version of the scale was completed in 1998 and contains one item that assesses overall job satisfaction and twelve items that tap into engagement “conditions” that contribute to employee engagement (Harter et al., 2020). The overall job satisfaction item and the twelve employee engagement items are scored separately, with the sum or mean score of the twelve items representing employee engagement (Harter et al., 2002). Harter et al. (2002) state the twelve items explain a considerable portion of the variance in overall job satisfaction and are predictors of personal job satisfaction as well as other affective constructs. Since 1998, the Q¹² has been administered to more than 43 million employees in 212 countries or territories and translated into 74 languages (Harter et al., 2020).

In 2020, Harter et al. conducted the tenth edition of the Q¹² meta-analysis. Based on 465 studies across 276 organizations and 54 industries, their meta-analysis sought to examine the business-level or work-unit-level relationship between employee engagement and eleven outcome variables (customer loyalty/engagement, profitability, productivity, turnover, safety incidents, absenteeism, shrinkage, patient safety incidents, quality (defects), wellbeing, and organizational citizenship). Results identified that employee engagement was related to each of the study’s eleven outcome variables. Additionally, the strongest effects were found between employee engagement and wellbeing, patient safety incidents, absenteeism, quality (defects), customer loyalty/engagement, safety incidents, and productivity. Lower correlations, yet highly generalizable were found for profitability, shrinkage, turnover, and organizational citizenship. Finally, the relationship between engagement and performance was substantial and highly generalizable across samples (Harter et al., 2020). Thus, the researchers conclude that the Q¹²

measure can be confidently applied in a variety of situations to measure important outcomes associated with employee engagement (Harter et al., 2020).

Notably, there has been criticism of the Q¹². One such criticism of the Q¹² is that it overlaps with well-known constructs like job involvement and job satisfaction. Schaufeli and Bakker (2010) assert that after reviewing the items of the Q¹², they do not measure employee engagement in regard to employee involvement, satisfaction, and enthusiasm as Harter et al. (2020) claim. Instead, Schaufeli and Bakker (2010) assert the Q¹² taps into the employee's perceived job resources. Stated differently, the scale is assessing the perceived level of resources in the employee's job and not the employee's actual level of engagement. Therefore, the Q¹² measures the antecedents of engagement regarding perceived job resources instead of the experience of engagement regarding involvement, satisfaction, and enthusiasm for work. Harter et al. (2002) acknowledge this and state that the Q¹² assesses "antecedents to positive affective constructs as job satisfaction" (p.209). Schaufeli and Bakker (2010) further state that it is somewhat awkward that Gallup's definition of job satisfaction is deemed an indication of engagement, yet the Q¹² measures predictors of job satisfaction.

The correlation between the Q¹² and the single item assessing overall job satisfaction is very high. Harter et al. (2002) report in their meta-analysis the observed correlation at the business-level is 0.77 which after controlling for measurement error increases to 0.91. Furthermore, the observed correlations, in their meta-analysis of 7,939 business units and 198,514 employees, between business unit performance were the same for both satisfaction and engagement ($r = 0.22$) (Harter et al., 2002). As such, Gallup's employee engagement construct is nearly indistinguishable from overall job satisfaction. Harter and colleagues seem to acknowledge this fact in writing about "employee satisfaction-engagement" (2002, p. 269).

Burnout Engagement Continuum

In 1997 Maslach and Leiter extended their conceptualization of burnout to include a lack of engagement in one's work. Engagement is defined as an "energetic experience of involvement with personally fulfilling activities that enhance one's sense of professional efficacy" (Leiter & Maslach, 2015, p.223). This definition of engagement is conceptualized to be the antipode of burnout, with the two concepts existing on opposite ends of a continuum. The three dimensions of burnout (exhaustion, cynicism, and inefficacy) are thought to be the opposite of the three dimensions of engagement (high energy, high involvement, and high efficacy). It is hypothesized that employees are somewhere along this continuum at any given time. Engagement contributes to a more complex and comprehensive view of one's relationship with their work. Whereas burnout describes a syndrome of distress that may occur consequently from enduring issues with work, engagement represents a positive state of fulfillment with one's work. The Maslach burnout inventory (MBI) is used to assess the burnout and engagement continuum by using the opposite scoring pattern for the three dimensions of burnout to imply engagement.

An important implication of this continuum is that programs to encourage engagement might be just as helpful at preventing burnout as programs designed to decrease the risk of burnout. Designing a workplace that supports the positive development of energy, involvement, and effectiveness should be successful in advancing employee well-being and productivity, therefore also promoting the health of the entire organization (Maslach & Leiter, 2016). Defining a positive antipode to burnout offers interventions the task of not only alleviating negative experiences but supporting positive alternatives (Maslach et al., 2009).

Work Engagement

In 2002(b), Schaufeli and colleagues sought to examine the relationship burnout has with engagement, however, they asserted that assessing this relationship is impossible with the current measure of engagement, the MBI, as both variables are assessed on a continuum that is covered by one instrument. This lead Schaufeli and colleagues to suggest that burnout and engagement are two distinct, yet related, concepts and thus warrant different measures for assessment.

Schaufeli et al. (2002b) acknowledge that burnout and engagement are experienced as opposite psychological states, yet they posit that an employee who is highly engaged is not necessarily experiencing low burnout and moreover, an employee experiencing low burnout might not be highly engaged. According to Schaufeli and colleagues, these constructs are unique and

independent of one another, thus leading to the subsequent definition and operationalization of work engagement. Schaufeli et al. (2002b) define work engagement as a “positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (p. 74).

Additionally, engagement refers to a more persistent and pervasive cognitive state than a momentary, specific emotional state (Schaufeli et al., 2002b). Vigor is described by high levels of energy and mental resilience, an eagerness to invest effort in one’s work, and persisting in the face of difficulties. Dedication is characterized by a strong involvement in one’s work and experiencing a sense of significance, pride, enthusiasm, and challenge in one’s work. Absorption refers to being deeply engrossed and fully concentrated in one’s work, where time passes quickly, and one has difficulties detaching from work. The definition of absorption is similar to the concept of “flow”, which is a state of concentration and complete absorption in the activity or situation. People experiencing flow describe it as an effortless concentration, where time is distorted, and one is experiencing intrinsic enjoyment in their task (Csikszentmihalyi, 1990). The

concepts absorption and flow are distinct as flow typically refers to a particular short-term peak experience, whereas engagement refers to a more persistent and pervasive state of mind.

Schaufeli et al. (2002b) examined the factor structure of both the MBI-GS and their newly developed 17-item Utrecht Work Engagement Scale (UWES). Results of simultaneous confirmatory factor analyses across two samples indicated that the original three-factor structure of the MBI-GS, exhaustion, cynicism, and professional efficacy, as well their hypothesized three-factor structure of the UWES (vigor, dedication, and absorption) were confirmed. Additionally, results for a model with two higher-order factors of burnout and engagement did not show good fit to the data. Rather, results identified an alternative model with two latent factors consisting of (1) exhaustion and cynicism, deemed 'core burnout' and (2) the three dimensions of engagement plus professional efficacy. Additionally, both latent factors were negatively related and shared between 22%-38% of the variance across their two samples. Overall, their results confirmed that to an extent, burnout and engagement are antipodes in that both constructs are moderately negatively related and share about a quarter to one-third of their variance. In examining the UWES factors, correlations between vigor and absorption were high. This has led researchers to suggest that it might be advantageous for researchers to score the UWES as a unidimensional composite as opposed to three separate scales (Christian & Slaughter, 2007). Schaufeli et al. (2002b) were influential to engagement research in developing the widely accepted UWES. Additionally, a shortened nine-item version of the UWES (Schaufeli et al., 2006) and a student version have been developed (Schaufeli et al., 2002a).

Work Engagement Antecedents

Work engagement is often studied using the Job Demands-Resources Model (JD-R) (Bakker & Demerouti, 2007) with job resources being a significant predictor of work

engagement (Hakanen et al., 2006; Llorens et al., 2006; Schaufeli & Bakker, 2004). Job resources include physical, social, or organizational aspects of the job that may: (a) decrease job demands, and the related physiological and psychological harm; (b) aid in achieving work goals; and/or (c) inspire learning, personal growth, and development (Bakker & Demerouti, 2008). Schaufeli (2012) states that job resources that predict engagement may differ by organization. In Schaufeli's review on the work engagement literature, he summarizes important job resources, such as autonomy, feedback, opportunities for development, skill variety, justice, social support, and transformational leadership (2012).

Christian and Slaughter (2007) conducted a meta-analysis on work engagement and job resources and demands. Their results found that each of the three dimensions of engagement (vigor, dedications, and absorption) was positively related to job resources. Specifically, they found that vigor and dedication were respectively positively related to autonomy, feedback, social support, and innovativeness. Whereas absorption was positively associated with autonomy and social support (Christian & Slaughter, 2007). Further, a study consisting of a nationally representative Dutch sample found higher levels of engagement among employees in complex professional jobs with high levels of job control compared to employees in less skilled and autonomous jobs (Smulders, 2006, as cited in Schaufeli, 2012). Koyuncu et al. (2006) found employees with higher levels of control, reward, recognition, and value fit were more engaged. In Halbesleben's (2010) meta-analysis, results indicated that autonomy/job control was highly correlated with engagement.

Regarding job demands, Christian & Slaughter (2007) noticed interesting findings, such that job demands were overall not significantly related to engagement; however, some demands may have negative effects on engagement, while others may have positive effects on

engagement. For example, they found that demands that required physical energy were negatively associated with vigor and absorption. However, cognitive demands were positively linked with vigor and dedication. They posit work that is more mentally challenging encourages individuals to self-invest more than individuals with physically demanding work.

Personal resources have also been identified as antecedents of work engagement. Personal resources refer to positive self-evaluations that are connected to resiliency, where the individual grasps their ability to successfully control and have an influence on their environment (Schaufeli, 2012). Self-efficacy has been found to be strongly associated with all three dimensions of engagement (Christian & Slaughter, 2007; Halbesleben, 2010). Schaufeli (2012) summarizes additional personal resources identified as antecedents of work engagement, these include self-efficacy, hope, optimism, organizational-based self-esteem, and the abilities to perceive and regulate emotions. Additionally, research has found that individuals low in neuroticism and high in extraversion and mobility are more inclined to experience engagement at work (Langelaan et al., 2006).

Outcomes of Work Engagement

Previous research has shown engagement is linked with numerous outcomes, such as organizational commitment (Llorens et al., 2006; Hakanen et al., 2006; Halbesleben, 2010; Richardson et al., 2006), reduced intention to quit and turnover (Halbesleben, 2010; Hallberg & Schaufeli, 2006; Schaufeli & Bakker, 2004), increased career satisfaction (Koyuncu et al., 2006), reduced burnout and health problems (Hallberg & Schaufeli, 2006; Koyuncu et al., 2006), and proactive behaviors (Sonnetag, 2003). In their meta-analysis, Christian and Slaughter (2007) found dedication and vigor were positively related to commitment and health. Rich et al. (2010) examined job engagement among firefighters and found engaged firefighters invested energy and

effort into executing tasks concerned with fighting fires and handling other emergencies, they were also more likely to be helpful, courteous, and engaged in organizational citizenship behaviors.

Research has shown those who are engaged perform better (e.g., Rich et al., 2010; Halbesleben, 2010). Engaged employees are related to higher employee performance in service and customer loyalty (Salanova et al., 2005). Schaufeli (2012) reviewed engagement literature and summarized that engaged employees make fewer errors, report fewer occupational injuries and accidents, are more innovative, and receive better ratings on effectiveness and job performance by their supervisors in comparison to their less engaged coworkers. Further, Harter et al., (2002) conducted a meta-analysis and found levels of engagement were positively linked with business-unit performance. (i.e., customer satisfaction and loyalty, profitability, productivity, turnover, and safety).

The Work Engagement and Burnout Relationship: Antecedents of One Another?

Whether engagement or burnout are antecedents or outcomes of one another has been of empirical interest for researchers. Researchers have wondered if one must be on fire for one to burn out. Maricuțoiu and colleagues (2017) conducted a meta-analysis to determine which comes first, work engagement or burnout. Their results found no significant temporal order between burnout and work engagement when all 25 studies and their various time intervals were considered. However, when using time-lag as a moderator, they found significant reciprocal cross-lagged effects between exhaustion and work engagement using a 12-month time lag. Thus, they assert their findings suggest a temporal order between burnout and engagement can be observed in their study only when using a one-year time lag. Junker et al. (2020) posed the question of whether work engagement is exhausting. They conducted two studies examining the

longitudinal relationship between work engagement and exhaustion. Their findings suggest that engaged employees are less exhausted initially but face a higher risk of exhaustion over time. Additionally, exhausted employees are less engaged, yet have the capability to become more engaged over time.

Moeller et al. (2018) investigated the relationship between intra-individual engagement-burnout profiles and demands-resources profiles in a sample representative of the U.S. workforce. A notable finding from their study was that nearly one out of five workers reported high levels of both engagement and burnout, which they termed engaged-exhausted workers. A surprising finding was that many employees appear to be engaged while simultaneously experiencing burnout and considering leaving their job. Overall, their results suggest that high work engagement can be a double-edged sword for some employees as it is associated with positive experiences and outcomes when burnout is low, but when burnout is high it is associated with a mix of positive and negative emotions and outcomes. Workers experiencing high burnout and high engagement simultaneously were more likely to experience high demands and high resources. This concurs with previous research that has identified high demands promote engagement when the resources are also high, and high resources helped to protect against the negative effects of job demands (Bakker et al., 2005a; Bakker et al., 2007; Hakanen et al., 2005). They pose the question for future research to examine why engagement and burnout co-occur in some individuals and not in others. Moeller et al. (2018) call for research to examine why the same demands-resource experiences create different engagement-burnout patterns for different individuals.

The work environment of first responders is inherently demanding and rewarding as such, helping occupations like that of a first responder may be intrinsically rewarding and foster

engagement in workers. An examination of the role resilience plays, as a developable resource, in the engagement and burnout relationship is worthy of examination. Especially as Moeller et al.'s (2018) study demonstrates resources are vital in the engagement and burnout relationship. Additionally, examining whether engaged workers are at risk of experiencing exhaustion and exhausted workers capable of experiencing engagement over time as Junker et al. (2020) found is worth examining in first responders as their profession may present unique demands and resources.

Theoretical Background

The present study adopts the synthesized framework of Job Demands-Resources model and Conservation of Resources theory to gain a deeper understanding of the effect resilience may play in the work engagement and burnout relationship. The Job Demands-Resources model (Demerouti et al., 2001a) is a heuristic model that includes job demands and resources as two working conditions to predict employee well-being. Conservation of Resources theory (Hobfoll, 1989) suggests that individuals seek to accumulate resources, protect their resources, build more resources, and that potential or actual resource loss is threatening. Accordingly, resilience can be considered a personal resource that individuals may draw upon during uncertain times.

Job Demands-Resources Model

The Job Demands-Resources model (JD-R) is an occupational stress model that was developed by Demerouti et al. (2001a) and based upon previous stress models (e.g., demand-control model) (Hakanen & Roodt, 2010). Essentially, different occupations have their own specific risk factors associated with job stress. The JD-R model allows for the incorporation of a wide range of working conditions as well as including both negative (e.g., burnout, ill health, etc.) and positive (e.g., engagement, resilience, etc.) indicators of employee well-being. The JD-

R model breaks these factors down into two general categories of job demands and job resources. Demerouti et al. (2001a) defined job demands as “those physical, social, or organizational aspects of the job that require sustained physical and/or psychological (i.e., cognitive and emotional) effort on the part of the employee, and are therefore associated with certain physiological and/or psychological costs” (p. 501). Job demands do not always have to be negative but become stressors when meeting the demand requires significant effort to maintain an expected level of performance, thus eliciting negative responses such as burnout (Schaufeli & Bakker, 2004). Examples of job demands include work pressure, emotional demands, time, an adverse physical work environment, role ambiguity, role conflict, and role overload.

Job resources are defined as “those physical, psychological, social, or organizational aspects of the job that may (a) reduce job demands and the associated physiological and psychological costs, (b) are functional in achieving work goals, and (c) stimulate personal growth, learning, and development” (Demerouti et al., 2001a, p. 501). Job resources can be broken down into workplace resources and personal resources. Examples of workplace resources include autonomy, role clarity, participation in decision making, and career opportunities, whereas personal resources include social support, self-efficacy, and optimism.

An important assumption of the JD-R model is the dual pathways of strain and engagement (Bakker & Demerouti, 2007). In the strain pathway, the demanding aspects of work or continued job strain (e.g., work pressure, emotional demands) exhaust the employees’ mental and physical resources, which may in turn eventually lead to burnout and to various health problems. The strain pathway is significant as burnout, in turn, predicts negative job and health consequences such as turnover and health impairments (Bakker & Demerouti, 2007). In the

engagement pathway, job resources and personal resources (e.g., social support, autonomy) contribute to engagement, which in turn is associated with desired outcomes (e.g., performance).

Previous research has identified a negative correlation between engagement and burnout and between demands and resources (e.g., Demerouti et al., 2001b; González-Romá et al., 2006; Schaufeli et al., 2008). In general, this suggests that resources and engagement tend to be low when demands and burnout are high and vice versa; however, there are interactions between demands and resources. Specifically, interactions suggest that high demands and resources may occur together, and such scenarios have a significant effect on engagement. High resources help to buffer against the negative effects of high demands, including burnout (Bakker et al., 2007; Hakanen et al., 2005).

In their review on resilience in the workplace, Hartmann et al. (2020) call for researchers to utilize the JD-R model to examine the buffering effect resilience may have against the negative influence of demands in the workplace. The present study uses the JD-R model to contend that resilience is a developable resource, and that resilience may safeguard employees from the negative effects of job demands and associated outcomes of exhaustion. Previous research has examined the relationship between resilience, work engagement, and burnout (e.g., Cooke et al., 2013; Gupta & Sharma, 2018), but a deeper examination is warranted, especially as resilience may be context specific. Further, studies have yet to examine the cross-lagged effect of resiliency, work engagement, and burnout in first responders.

Conservation of Resources Theory

Proposed by Hobfoll (1989), Conservation of Resources (COR) theory asserts that individuals strive to gather, build, and protect what they value. When resources are threatened, lost, or one fails to gain after an investment of resources, strain occurs (Hobfoll, 1989, 2002;

Hobfoll & Shirom, 1993). Resources can refer to objects (e.g., tools), personal characteristics (e.g., self-efficacy), and energies (e.g., money) that one values to obtain and strengthen resources (Alarcon, 2011). Demands are conceptualized as the threat of loss, actual loss, or a lack of resource gain after investment.

COR has two basic principles concerning protecting resources from loss. The first principle is the primacy of resource loss, which states that it is more detrimental for one to lose resources compared to when there is a gain of resources. Hobfoll & Freedy (1993) state that burnout is more likely to occur when resources are lost as opposed to a lack of resource gain. The second principle, resource investment, states that individuals will invest resources to protect against losing resources, to recover from losses, and to gain further resources. Further, in the coping context, people will invest resources to avoid future resource losses.

From these COR principles, Hobfoll and Shirom (2001) assert that individuals with a greater collection of resources are less prone to resource loss and individuals lacking strong access to resources are more susceptible to resource loss. Additionally, loss and gain spirals are possible in COR theory, such that individuals who do not have robust resource pools are more likely to experience loss (loss spiral) and individuals with robust resource pools are more likely to seek opportunities to risk resources to increase resource gains (gain spiral). Presuming there are spiral gains between job resources and engagement suggests that they mutually reinforce each other. For example, when employees are provided with fundamental job resources, in turn, they may become more engaged over time. Engaged employees report feeling vigor and thus are more energized to take advantage of existing job resources and are motivated to create new resources (Hakanen & Roodt, 2010). Further, the same can be said for a spiral between demands

and burnout which may create a loss spiral. Importantly, resources gain their saliency in the context of resource loss, resource gain alone only has a modest effect (Hobfoll, 2002).

Few studies have examined resilience using COR theory (Hartmann et al., 2020). Of those studies that have examined resilience using COR theory, some have viewed resilience as a personal resource variable (e.g., Meneghel et al., 2016; Shin et al., 2012). Based on COR theory, access to circumstantial resources from the social environment provides the opportunity for developing additional resources. Building on COR theory, examining the reciprocal relationship between resilience, burnout, and work engagement will provide insight into their functions as promotive or protective constructs. For example, resilience may act in promoting work engagement and protecting one from experiencing burnout. Alternatively, if one is experiencing burnout, based on COR theory, they may act to protect their remaining resources and experience significantly less work engagement as they do not have the resources to expend toward experiencing vigor, dedication, and absorption toward their job. Research has yet to examine the reciprocal relationship between burnout, work engagement, and resilience of first responders. A deeper understanding of their reciprocal relationship may result in findings that can be used to enhance organizational resources and/or organizational support to promote workers' resilience.

The Present Study

The present study aimed to clarify the interplays among engagement, resilience, and the burnout dimension emotional exhaustion over three time points. Specifically, the purpose of this study is threefold: 1) examine the relationship between resilience and respectively, work engagement and emotional exhaustion over time, 2) examine the relationship between engagement and emotional exhaustion over time, and 3) examine the stability of each respective

construct, work engagement, emotional exhaustion, and resilience over three time points to provide additional evidence of their respective stability.

It is especially timely and important to research and deepen our understanding of the role resilience may have in relation to burnout and work engagement. Given the changing and unpredictable nature of today's organizational environment, resilient employees may have an advantage in navigating and 'bouncing back' from adversities they face at work. Further, resilience and wellbeing have been found to be reciprocally related (Tonkin et al., 2018), therefore a deeper understanding of resilience may in turn provide useful insight into employee wellbeing. The framework based on the concepts of demands and resources, integral aspects of both the JD-R model and COR theory, has been shown to be useful to explain organizational wellbeing and attitudes like burnout and work engagement (e.g., Maslach et al., 2001). Utilizing the JD-R model and COR theory, the present study views resilience as one type of key resource to deal with organizational challenges and set to examine the protective effect of resilience on emotional exhaustion and work engagement.

Kossek and Perrigino (2016) reviewed resilience literature by occupation and concluded that first responders are an understudied population in examining resilience. First responders are, by nature, the first to arrive at the scene of an emergency, such as firefighters and emergency medical services (EMS) personnel. The nature of their job exposes them repeatedly to adversity, including potentially traumatic events, following disasters or accidents. Further, research has shown that first responders report experiencing burnout (e.g., Murphy et al., 1994; Pike et al., 2019). Smith et al. (2018) reported that firefighters experiencing burnout significantly affected their safety performance. Further, Essex and Scott (2008) examined chronic stress and coping strategies among voluntary EMS personnel and found an alarming 92% of their sample scored

high on emotional exhaustion and 99% reported high scores on depersonalization, however, two-thirds reported high levels of personal accomplishment. The work environment of first responders is inherently demanding and rewarding, such that helping occupations may be intrinsically rewarding and foster engagement in workers. Frago et al. (2016) examined predictors and outcomes of burnout and engagement among nurses and EMS personnel. Their results show that burnout was more strongly associated with job demands than resources and additionally, job resources were a stronger predictor for engagement than job demands. Additionally, they found engagement was more strongly associated with commitment than burnout, whereas burnout was a stronger predictor for turnover intentions. First responders are repeatedly exposed to critical situations; however, the helping nature of their job may be intrinsically motivating. Research has yet to examine the potential effects resilience has in promoting positive organizational attitudes, such as work engagement. This study addresses this gap in the literature by examining the interplay between resilience, burnout, and work engagement in a sample of first responders.

Hypotheses

Research has shown that burnout scores are generally stable over time without a deliberate effort, such as an intervention, to alleviate the syndrome (Schaufeli & Buunk, 2003). Schaufeli and Enzmann (1998) found support for the stability of burnout, and specifically emotional exhaustion, in analyzing 15 longitudinal studies that utilized the MBI. They found between 24% and 67% of the variance of the second measurement of emotional exhaustion was explained by the first measurement of emotional exhaustion (Schaufeli & Enzmann, 1998, p. 96-98). Further, engagement has been found to be relatively stable over time as well. Mauno et al. (2007) examined Finnish health care personnel over a two-year period. They conducted a

MANCOVA and found the main effect for time was not significant ($F = 1.760$, $df = 389 (3)$, $p = .154$), such that the average level of work engagement did not differ between the first and second measurement for any occupational group of health care personnel. Resilience, as well, is believed to be relatively stable over time (Fisher et al., 2019; Kossek & Perrigino, 2016; Luthans, 2002), however, there is a dearth of longitudinal studies examining the stability of resilience over time, especially in a population of first responders who may benefit from resilience on the job. The process conceptualization contends that resilience is a mixture of actions, malleable capacities, and stable, trait-like elements that affect the result of the resilience process (Fisher et al., 2019; Kossek & Perrigino, 2016). Therefore, it is likely that engagement, burnout, and resilience scores will remain stable over time.

The current study aimed at testing the stability hypothesis based on a regression-based approach (i.e., auto regressions in a path analysis model) instead of correlation analysis to control for prior levels of engagement and emotional exhaustion in the examination of other study hypotheses. By doing so, the possibility that hypothesized cross-lagged effects are due to correlated independent variables and criterion variables at a prior time point (Lee et al., 2019; Selig & Little, 2012) can be ruled out.

Hypothesis 1a: Work engagement at Time 1 will be positively related to work engagement at Time 2.

Hypothesis 1b: Emotional exhaustion at Time 1 will be positively related to emotional exhaustion at Time 2.

Hypothesis 1c: Resilience at Time 1 will be positively related to resilience at Time 2.

Hypothesis 1d: Work engagement at Time 2 will be positively related to work engagement at Time 3.

Hypothesis 1e: Emotional exhaustion at Time 2 will be positively related to emotional exhaustion at Time 3.

Hypothesis 1f: Resilience at Time 2 will be positively related to resilience at Time 3.

Alternatively, longitudinal studies on engagement, burnout, and resilience have found evidence that their relationships might not be as straightforward as once thought. Moeller et al. (2018) found nearly one-fifth of their sample reported experiencing both high engagement and burnout simultaneously. High engagement can be a double-edged sword for some employees as it is associated with positive work outcomes but can also be accompanied with burnout. Previous research has shown burnout is contagious and can maintain itself through social interactions on the job (Bakker et al., 2005b; González-Morales et al., 2012). Further, Junker et al. (2020) found that engaged employees were initially less exhausted but were at higher risk of exhaustion over time. Employees that were exhausted were initially less engaged but showed the capacity to become more engaged over time. Junker et al. (2020) believe their specific context accounts for the unexpected positive association between the initial level of exhaustion and the increase in work engagement over time. Their sample examined both psychology students and psychotherapists in training, both groups have a long-term goal of completing their education in mind. They posit this may in turn change their coping style to more problem-solving coping as opposed to emotion-focused coping, where instead of withdrawing from their tasks, their study participants were more inclined to engage with them. Junker et al. (2020) call for researchers to explore this relationship in other occupations and associated moderators. Furthermore, Junker et al.'s (2020) findings oppose the theoretical relationship between burnout and engagement, such that according to the JD-R model and COR, a lack of resources accompanied with high demands does not foster engagement.

An examination of the temporal relationship of burnout and engagement over time is beneficial to gaining a deeper understanding of their relationship among first responders. Especially as burnout and engagement rely heavily on the contextual job resources and demands, the patterns shown in previous research may or may not replicate with a sample of first responders. The following hypotheses seek to examine the relationship between first responders' emotional exhaustion and engagement over time. Specifically, based on the JD-R framework, experiencing high work engagement suggests that one has adequate resources and is thus less likely to experience burnout as time passes. Simultaneously, based on COR theory, it is postulated that the state of emotional exhaustion as an outcome of chronic exposure to the stressful work environment can signal workers that their resources need to be preserved and lead them to slow down the deliberate process of demonstrating a positive psychological attitude and motivation for proactive involvement with their work.

Hypothesis 2a: Highly engaged individuals at Time 1 will report significantly less emotional exhaustion at Time 2.

Hypothesis 2b: Individuals higher in emotional exhaustion at Time 1 will be significantly less engaged at Time 2.

Hypothesis 2c: Highly engaged individuals at Time 2 will report significantly less emotional exhaustion at Time 3.

Hypothesis 2d: Individuals higher in emotional exhaustion at Time 2 will be significantly less engaged at Time 3.

The JD-R model suggests that high resources help to protect against the negative effects of high demands, such as burnout (Bakker et al., 2007; Hakanen et al., 2005). Resilience, as a process and developable capacity, may play a role in protecting individuals from the negative effects of job demands, therefore leading to lower burnout and higher engagement. Resilience is a personal resource linked to coping and the ability to evoke positive emotions during negative

circumstances (Tugade et al., 2001). Moreover, it is thought that resilience aids in resisting and recovering from stressors (Ong et al., 2006). During stressful events, psychologically resilient individuals are more likely to maintain emotional composure (Bonanno, 2004). Therefore, resilience may function as a safety barricade in protecting the overflow of occupational demands.

Drawing from COR theory, resilience allows one the capacity to minimize the unnecessary draining of resources and optimize the efficient use of one's resources to cope with challenges. Therefore, individuals higher in resilience are likely to find the workplace challenges they are facing less threatening. Resilience helps individuals navigate difficult times and enhances coping abilities (Parker et al., 2015), which may aid in the rapid replenishment of personal and social resources. Further, resilience is associated with positive work attitudes like job satisfaction (Meneghel et al., 2016; Youssef & Luthans, 2007), career satisfaction (Lyons et al., 2015), and organizational commitment (Paul et al., 2016; Youssef & Luthans, 2007) which generally are negatively associated with burnout (e.g., Alarcon, 2011; Schaufeli & Enzmann, 1998) and positively associated with work engagement (e.g., Koyuncu et al., 2006; Llorens et al., 2006). Specifically, resilience may act as a safeguard against occupational adversities such as high demands and/or lower resources, such that the worker is able to draw upon their resilience and may experience less strain from their job which would lead to negative organizational outcomes such as experiencing emotional exhaustion.

Hypothesis 3a: Individuals with greater resilience at Time 1 will be significantly more engaged with their work at Time 2.

Hypothesis 3b: Individuals with greater resilience at Time 1 will report significantly less emotionally exhausted at Time 2.

Hypothesis 3c: Individuals with greater resilience at Time 2 will be significantly more engaged with their work at Time 3.

Hypothesis 3d: Individuals with greater resilience at Time 2 will report significantly less emotionally exhausted at Time 3.

Chapter 3 - Method

Sample and Procedure

The Center for Firefighter Injury Research and Safety Trends (FIRST) provided the data for this study. Specifically, data from this study comes from a larger study from the FIRST Center called the COVID-19 RAPID Mental Health Assessment (RAPID). RAPID assessed the impact of the pandemic on first responders' mental health and well-being across different indicators such as safety climate, burnout, job satisfaction, work engagement, and stress to name a few. While the data from the present study derives from the RAPID assessment, the study variables and hypothesized model in the present study are unique and had yet to be examined.

Data were collected from fire department-based EMS first responders from three large metropolitan areas in the United States. Participants were recruited using coordinated efforts between department and union leadership in each department in order to recruit a random sample of EMS first responders. Participants were invited to complete six monthly surveys, beginning in May 2020 through October 2020. Working with the aid of each department's safety officers and deputy Chief Officers responsible for EMS, 200 plus EMS first responders were recruited from each department. Participation in the study was voluntary and participants were asked to complete a brief survey once a month with approximately one-month lag between surveys for six months. Participants were informed of the nature of the study, seeking to examine changes in safety practices, health, and well-being among first responders. Information regarding how the data would be used within their department and respective station, as well as for research purposes was also provided to the participants.

Initially, 800 EMS first responders enrolled in the study. Each month, participants received an email invitation, sent by the research team, containing a link to the monthly survey.

For the current study, data from May (referred to as Time 1), June (referred to as Time 2), and July (referred to as Time 3) were used. Response rates for the entire RAPID study are as follows: May = 478 (59.8%), June = 364 (45.5%), July = 292 (36.5%), August = 444 (55.5%), September = 347 (43.4%), and October = 255 (31.9%).

Data were retained from participants who completed three or more surveys and from stations with a minimum of three respondents. The final sample includes 208 career (non-voluntary) first responders nested within 45 stations over three departments. Each station averaged 4.62 respondents ($SD = 2.15$). The respondents were primarily male (87.50%), the mean age was 36.62 years ($SD = 6.72$), and the average tenure was 9.2 years of service in the fire department. The ethnicities of the participants ranged from 62.50% white/non-Hispanic, 15.38% Hispanic, 7.69% black, and 14.42% reported other.

Important to studying resilience is to define the adversity at hand (Luthar et al., 2000). This study contends that the COVID-19 pandemic and the rapidly evolving situation of the pandemic (e.g., rules, regulations, knowledge of the virus) represents adversity, especially for front-line workers such as first responders.

Materials

Resilience. To assess resilience, Campbell-Sills and Stein's (2007) ten-item measure of the Connor-Davidson Resilience Scale (CD-RISC) was utilized. Participants responded on a 5-point Likert-type scale. Response options provided include: 1 = Not true at all, 2 = Rarely true, 3 = Sometimes true, 4 = Often true, 5 = True nearly all the time. An example item is "I tend to bounce back after illness, injury, or hardships". See Appendix 3 for the complete scale.

Work engagement. Work engagement was assessed using Schaufeli et al.'s (2002b) six-item measure. Participants responded to the items regarding how they felt about their work as it

related to EMS runs. Participants responded to each item using a 5-point Likert-type scale (anchored at 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always). An example item is “I feel bursting with energy”. See Appendix 3 for the complete scale.

Emotional exhaustion. Researchers have found that emotional exhaustion exhibits slightly stronger relationships to outcome variables than depersonalization and reduced personal accomplishment (Lee & Ashforth, 1993, 1996; Wright & Bonett, 1997). Further, research has found that the dimensions of cynicism and reduced personal accomplishment develop concurrently from emotional exhaustion (Alarcon, 2011; Taris et al., 2005). In the interest of model parsimony, the present study utilizes the emotional exhaustion dimension of burnout as it is an indicator of further burnout dimensions of cynicism and reduced personal accomplishment. Additionally, previous research has utilized emotional exhaustion in the examination of burnout (e.g., Cropanzano et al., 2003; Moon & Hur, 2011; Wright, & Cropanzano, 1998).

To measure emotional exhaustion, an adopted nine-item measure from Taylor et al. (2019) was used. In the adopted measure, seven items of the original nine-item MBI measure (Maslach & Jackson, 1981) were adopted to address the specific population. Participants were asked to rate the nine items regarding how they feel about their work as it relates to EMS runs. Ratings were provided on a 5-point Likert-type scale (anchored at 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always). An example item is “I feel emotionally drained from this kind of work”. See Appendix 3 for the complete scale.

Analytic Procedure

A path analysis was conducted to examine the hypothesized relationships between resilience, emotional exhaustion, and engagement. In path analysis, it is assumed that variables in the model are measured without error and latent variables are not specified, unlike structural

equation modeling. This indicates that path analysis is appropriate only when its measurement model is of good fit and goodness of fit of the measurement models were examined before testing the hypotheses. For the current study there were two key reasons for adopting path analysis, sample size and model complexity. Due to the limited sample size and complex nature of cross-lagged design, path analysis was preferred over structural equation modeling which entails a larger sample.

To clean the data and prepare it for assumption checking and analyses, predictive mean matching multiple imputation method at the composite level was used to address missing data points (Elliott & Hawthorne, 2005; Vink et al., 2014). Predictive mean matching has been demonstrated to be robust with non-normal data with less than 20-30% of missingness (Kleinke, 2017) and small samples of less than 100 (Kleinke, 2018). Predictive mean matching was conducted on data from participants who completed three or more surveys and from stations with a minimum of three respondents, resulting in 208 participants. Of the respondents, 71 (34.1%) completed 3 surveys, 49 (23.6%) completed four surveys, 51 (24.5%) completed five surveys and 37 (17.8%) completed all six surveys. This resulted in no missing data on the item and scale levels (Tabachnick & Fidell, 2007).

Prior to conducting the path analysis, multivariate assumptions were assessed. The assessment of univariate outliers identified four individuals with z-scores above 3.29 for engagement at Time 2, and 3 individuals were identified as having z-scores above 3.29 for engagement at Time 3. No other univariate outliers were identified. When assessing normality, violations were identified. Three time points had skewness outside the range per Kline (2016) of -2 to +2 (i.e., -4.82 for Work Engagement Time 2, -2.53 for Work Engagement Time 3, and 3.39

for Emotional Exhaustion Time 1). Kurtosis ranged from -0.92 to 1.82, within the range of -7 to +7 when assessing multivariate normality (Curran et al., 1996).

To address the issue of unmet normality assumption, an alternative approach to multivariate assumption checking was then pursued for the following reasons. First, the dataset is unique in that it is a repeated measure design that was obtained from those who are experiencing non-typical levels of work demands during an atypical time, making it difficult to satisfy the normality assumptions. Second, z-transformations of that data should be taken with caution when using repeated measures because meaningful variances exist not only at the within time point level, but also across repeated measures from a person. Third, repeated measures are non-independent, while some of the repeated measures were specified as endogenous variables in the longitudinal path analysis model specified. These reasons can make it difficult to meet both independence assumption and multivariate normality assumption (i.e., residuals of all endogenous variables should be normally distributed). To address the potential violation of the normality of the data, maximum likelihood estimation with robust Huber-White standard errors and a scaled test statistic which is asymptotically identical to the Yuan-Bentler test statistic was utilized and this approach was shown to be robust to the non-normal data (Yuan & Bentler, 1998; 2000). To assess for linearity, scatterplot-based visual analysis approach was taken and no curvilinear trends were apparent for the hypothesized relationships. Multicollinearity was tested for the study variables. All VIF indices were less than two, providing evidence that there were no problems concerning multicollinearity as the VIF indices were less than ten (Kline, 2016). Homoscedasticity was tested by plotting the residuals and no violations were identified (Tabachnick & Fidell, 2007).

Chapter 4 - Results

Descriptive Statistics and Intercorrelations

Table 1 displays the descriptive statistics, intercorrelations, and Cronbach's alpha for the study variables. The internal consistencies for the variables were sufficiently reliable (Kline, 2016). The study examined first responders from three different departments across the U.S. To examine whether there were departmental differences that might be meaningful, descriptive statistics were examined (Table 2). Also, three MANOVAs were conducted respectively for the measures across Times 1 through 3. Significant difference was found only for the emotional exhaustion measure at Time 2 (i.e., $F(3,204) = 4.90, p = 0.03$). Together this suggests that systematic variances in the study variables across the three departments are non-substantial.

Next, a series of confirmatory factor analyses (CFA) were conducted using jamovi version 1.6 (2021) to ensure the psychometric properties of the measurement models. CFAs were conducted on each variable for each of the three time points to demonstrate the variables' goodness of fit or lack thereof as path analysis has the assumption of perfect reliability. Table 3 displays the CFA goodness of fit results. Comparative fit index (CFI) and standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA) are presented in Table 3. It is worth noting that degrees of freedom ten or less are subject to concerns of inflated RMSEA (Kenny et al., 2015). Also, recent studies (e.g., Maydeu-Olivares et al., 2018; Shi et al., 2020) have shown that SRMR tended to be a more reliable and accurate model fit index than RMSEA.

Table 1. Correlation Coefficients for Model Variables

	Mean (<i>SD</i>)	<i>R</i> ²	WE.T1	EE.T1	R.T1	WE.T2	EE.T2	R.T2	WE.T3	EE.T3	R.T3
WE.T1	3.19 (0.87)	-	0.87								
EE.T1	2.59 (0.88)	-	-0.51***	0.92							
R.T1	4.13 (0.54)	-	0.26***	-0.23***	0.89						
WE.T2	3.23 (0.91)	0.31	0.49***	-0.49***	0.16*	0.90					
EE.T2	2.51 (0.92)	0.29	-0.23***	0.52***	-0.28***	-0.22**	0.94				
R.T2	4.08 (0.57)	0.31	0.13	-0.19**	0.56***	0.26***	-0.30***	0.90			
WE.T3	3.20 (0.92)	0.29	0.30***	-0.33***	0.19**	0.49***	-0.33***	0.16*	0.91		
EE.T3	2.59 (0.92)	0.44	-0.29***	0.51***	-0.23***	-0.46***	0.58***	-0.32***	-0.19**	0.94	
R.T3	4.06 (0.57)	0.23	0.20**	-0.27***	0.43***	0.25***	-0.25***	0.48***	0.12	-0.32***	0.91

Notes. * $p < .05$; ** $p < .01$; *** $p < .001$. WE.T1 = work engagement Time 1; EE.T1 = employee engagement Time 1; R.T1 = resilience Time 1; WE.T2 = work engagement Time 2; EE.T2 = employee engagement Time 2; R.T2 = resilience Time 2; WE.T3 = work engagement Time 3; EE.T3 = employee engagement Time 3; R.T3 = resilience Time 3; *SD* = standard deviation; Cronbach's α is on the diagonal.

Table 2. Descriptive Statistics by Department for Model Variables

	ID	WE.T1	EE.T1	R.T1	WE.T2	EE.T2	R.T2	WE.T3	EE.T3	R.T3
Mean	1	3.19	2.57	4.19	3.24	2.57	4.15	3.23	2.63	4.09
	2	3.23	2.84	3.88	3.33	3.08	3.90	3.42	2.97	3.98
	3	3.17	2.55	4.09	3.20	2.23	4.01	3.07	2.40	4.03
SD	1	0.92	0.93	0.57	0.84	0.87	0.58	0.90	0.94	0.59
	2	0.86	1.01	0.61	0.81	1.07	0.69	0.81	0.82	0.61
	3	0.79	0.73	0.46	1.06	0.87	0.51	0.99	0.86	0.54
Skewness	1	-0.10	0.56	-0.13	-0.16	0.41	-0.30	0.02	0.18	-0.01
	2	-0.01	0.40	0.55	-0.20	0.26	-0.47	0.69	-0.54	0.16
	3	-0.13	0.60	0.14	-1.43	-0.82	0.13	-1.11	-0.51	0.13
SE Skewness	1	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
	2	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
	3	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Kurtosis	1	-0.25	-0.06	-0.98	-0.02	-0.16	-0.29	-0.41	0.71	-0.84
	2	-0.46	-0.30	-0.72	-0.95	-1.43	-0.57	-0.48	0.19	-1.20
	3	0.29	0.50	-0.66	2.95	0.68	-0.53	2.41	1.64	-0.83
SE Kurtosis	1	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
	2	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
	3	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58

Notes. SD = standard deviation; SE Skewness = standard error skewness; SE Kurtosis = standard error skewness; ID = Department ID; WE.T1 = work engagement Time 1; EE.T1 = emotional exhaustion Time 1; R.T1 = resilience Time 1; WE.T2 = work engagement Time 2; EE.T2 = emotional exhaustion Time 2; R.T2 = resilience Time 2; WE.T3 = work engagement Time 3; EE.T3 = emotional exhaustion Time 3; R.T3 = resilience Time 3.

Table 3. Confirmatory Factor Analyses

	χ^2	df	P	CFI	SRMR	RMSEA	RMSEA 90%CI	
							Lower	Upper
Work Engagement T1	116	9	< 0.001	0.915	0.044	0.158	0.133	0.184
Emotional Exhaustion T1	243	27	< 0.001	0.917	0.046	0.129	0.115	0.145
Resilience T1	221	35	< 0.001	0.912	0.045	0.105	0.092	0.119
Work Engagement T2	101	9	< 0.001	0.926	0.038	0.168	0.139	0.198
Emotional Exhaustion T2	169	27	< 0.001	0.940	0.039	0.120	0.103	0.138
Resilience T2	181	35	< 0.001	0.917	0.045	0.107	0.092	0.123
Work Engagement T3	68.8	9	< 0.001	0.945	0.035	0.151	0.119	0.185
Emotional Exhaustion T3	143	27	< 0.001	0.944	0.036	0.121	0.102	0.141
Resilience T3	132	35	< 0.001	0.938	0.041	0.098	0.080	0.116

Notes. T1 = Time 1; T2 = Time 2; T3 = Time 3; df = degrees of freedom; CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CI = confidence interval.

Hypotheses Testing

To test the hypothesized model, path analysis was conducted in R using the lavaan package (Rosseel, 2012). First, the model was assessed for goodness of fit in terms of CFI and SRMR. Good fit would justify the pursuit of path analysis and interpretation of the path analysis-based results. Overall model fit was assessed based on a CFI above 0.95 (Hu & Bentler, 1999), a SRMR less than 0.08 (Hu & Bentler, 1999), and the RMSEA less than or equal to 0.06 (Hu & Bentler, 1999) to indicate good model fit. The path analysis results indicated a significant robust Chi-square estimate, however the other fit indices indicated good model fit ($\chi^2 = 22.35$ [$df = 13$], $p = 0.05$, robust CFI = 0.979, robust SRMR = 0.061, robust RMSEA = 0.066).

The first set of hypotheses examined the stability of each construct, respectively, over the three time points. Hypothesis 1a stated that work engagement at Time 1 would be positively related to work engagement at Time 2. The results show this hypothesis was supported ($B_1 = 0.35$, $SE = 0.07$, $p < 0.001$). First responders who reported greater work engagement at Time 1 also reported greater work engagement at Time 2. Hypothesis 1b was emotional exhaustion at Time 1 would be positively related to emotional exhaustion at Time 2. This hypothesis was supported ($B_2 = 0.52$, $SE = 0.08$, $p < 0.001$), such that those reporting greater emotional exhaustion at Time 1 also reported greater emotional exhaustion at Time 2. Hypothesis 1c stated that resilience at Time 1 will be positively related to resilience at Time 2. Hypothesis 1c was supported ($B_3 = 0.59$, $SE = 0.07$, $p < 0.001$), such that those reporting higher resilience at Time 1 also reported higher resilience at Time 2.

Hypothesis 1d stated work engagement at Time 2 will be positively related to work engagement at Time 3. This hypothesis was supported, ($B_4 = 0.46$, $SE = 0.06$, $p < 0.001$). First responders who reported greater work engagement at Time 2 also reported greater work

engagement at Time 3. Hypothesis 1e stated emotional exhaustion at Time 2 will be positively related to emotional exhaustion at Time 3. Hypothesis 1e was supported ($B_5 = 0.47$, $SE = 0.06$, $p < 0.001$), such that those reporting greater emotional exhaustion at Time 2 also reported greater emotional exhaustion at Time 3. Hypothesis 1f was resilience at Time 2 will be positively related to resilience at Time 3. This hypothesis was supported ($B_6 = 0.48$, $SE = 0.07$, $p < 0.001$), such that first responders reporting higher resilience at Time 2 also reported higher resilience at Time 3.

Taken together, the stability hypotheses were supported, thus providing further evidence these constructs are stable over time to a certain extent. When examining the correlation coefficients, all the correlations were significant and most relationships were moderate. The correlation between work engagement at Times 1 and 2 was moderate ($r = 0.49$), whereas the correlation between work engagement Times 1 and 3 was weak ($r = 0.30$). The weak relationship could represent the toil of the pandemic on first responders between Time 1 and 3, thus showing the potential unpredictability of work engagement over time. The correlation between work engagement Times 2 and 3 also displays a moderate correlation ($r = 0.49$). When examining emotional exhaustion, the correlation between Times 1 and 2 displays a moderate correlation ($r = 0.52$). A moderate correlation was also found between emotional exhaustion Times 1 and 3 ($r = 0.51$). Additionally, Times 2 and 3 emotional exhaustion correlation was also moderate ($r = 0.58$). Taken together, the similar correlation coefficients over the three months suggest that emotional exhaustion is ongoing, though not constant. Examining the correlation coefficients between resilience Times 1 and 2 show a moderate correlation ($r = 0.52$). Resilience Times 1 and 3 correlation was also moderate ($r = 0.43$), however weaker than the previous Times 1 and 2 relationship. Resilience Times 2 and 3 correlation was moderate ($r = 0.48$). Altogether, the

correlations depict the relative stability of resilience over time, but generally moderate correlation effect sizes were identified only for the measures with one-month interval (Cohen, 1992), thus providing insight into the notion of resilience being a dynamic process. In sum, the key study variables are moderately stable over time.

The next set of hypotheses examined the reciprocal exchange between work engagement and emotional exhaustion over three time points. Hypothesis 2a stated highly engaged individuals at Time 1 will report significantly less emotional exhaustion at Time 2. Hypothesis 2a was not supported ($B_7 = 0.07$, $SE = 0.06$, $p = 0.241$). Hypothesis 2b stated individuals higher in emotional exhaustion at Time 1 will be significantly less engaged at Time 2. Hypothesis 2b was supported ($B_8 = -0.31$, $SE = 0.07$, $p < 0.001$), such that first responders reporting higher emotional exhaustion at Time 1 were also reporting less work engagement at Time 2. Hypothesis 2c stated highly engaged individuals at Time 2 will report significantly less emotional exhaustion at Time 3. Hypothesis 2c was supported ($B_9 = -0.32$, $SE = 0.05$, $p < 0.001$), such that first responders reporting high work engagement at Time 2 also reported significantly less emotional exhaustion at Time 3. Hypothesis 2d stated that individuals higher in emotional exhaustion at Time 2 will be significantly less engaged at Time 3. Hypothesis 2d was supported ($B_{10} = -0.24$, $SE = 0.06$, $p < 0.001$). First responders who reported high emotional exhaustion at Time 2 were also reporting significantly less work engagement at Time 3. Collectively, these results show the path from emotional exhaustion to engagement (H2b & H2d) was more consistently supported. In contrast, the path from engagement to emotional exhaustion (H2a & H2c) was supported only for Times 2 and 3, but not for Times 1 and 2.

The final set of hypotheses examined the relationship between resilience and work engagement and emotional exhaustion, respectively, over time. Hypothesis 3a stated individuals with greater resilience at Time 1 will be significantly more engaged with their work at Time 2.

Hypothesis 3a was not supported ($B_{11} = 0.001, SE = 0.10, p = 0.995$). Hypothesis 3b stated individuals with greater resilience at Time 1 will report significantly less emotional exhaustion at Time 2. Hypothesis 3b was supported ($B_{12} = -0.30, SE = 0.10, p = 0.003$), such that first responders reporting greater resilience at Time 1 also reported significantly less emotional exhaustion at Time 2. Hypothesis 3c stated individuals with greater resilience at Time 2 will be significantly more engaged with their work at Time 3. Hypothesis 3c was not supported ($B_{13} = -0.04, SE = 0.12, p = 0.704$). Hypothesis 3d stated individuals with greater resilience at Time 2 will report significantly less emotional exhaustion at Time 3. Hypothesis 3d was not supported ($B_{14} = -0.15, SE = 0.11, p = 0.177$). See Table 1 for R^2 values and Table 4 for parameter estimates for the path model. In all, only the resilience at Time 1 to emotional exhaustion at Time 2 relationship was supported. This can be interpreted as the resilience to emotional exhaustion hypothesis is only partially supported while the resilience to engagement hypothesis is not supported. See Figure 1 for main path model results.

Table 4. Parameter Estimates for Path Model

Pathway	<i>B</i>	<i>SE</i>	95% CI		β	<i>p</i>
			<i>LL</i>	<i>UL</i>		
<i>Direct Effects</i>						
1. WE.T1 → WE.T2	0.35	0.07	0.22	0.49	5.28	< 0.001
2. EE.T1 → EE.T2	0.52	0.08	0.36	0.69	6.24	< 0.001
3. R.T1 → R.T2	0.59	0.07	0.45	0.72	8.52	< 0.001
4. WE.T2 → WE.T3	0.46	0.06	0.34	0.58	7.41	< 0.001
5. EE.T2 → EE.T3	0.47	0.06	0.36	0.58	8.28	< 0.001
6. R.T2 → R.T3	0.48	0.07	0.35	0.60	7.29	< 0.001
7. WE.T1 → EE.T2	0.07	0.06	-0.04	0.18	1.17	0.241
8. EE.T1 → WE.T2	-0.31	0.07	-0.45	-0.18	-4.50	< 0.001
9. WE.T2 → EE.T3	-0.32	0.05	-0.42	-0.23	-6.84	< 0.001
10. EE.T2 → WE.T3	-0.24	0.06	-0.36	-0.13	-4.05	< 0.001
11. R.T1 → WE.T2	0.001	0.10	-0.20	0.20	0.01	0.995
12. R.T1 → EE.T2	-0.30	0.10	-0.51	-0.10	-2.92	0.003
13. R.T2 → WE.T3	-0.04	0.12	-0.27	0.18	-0.38	0.704
14. R.T2 → EE.T3	-0.15	0.11	-0.36	0.07	-1.35	0.177
<i>Indirect Effects</i>						
15. WE.T1 → WE.T2 → WE.T3	0.16	0.04	0.09	0.25	3.76	< 0.001
16. EE.T1 → EE.T2 → EE.T3	0.24	0.06	0.14	0.36	4.42	< 0.001
17. R.T1 → R.T2 → R.T3	0.28	0.05	0.18	0.38	5.43	< 0.001
18. EE.T1 → WE.T2 → EE.T3	0.10	0.03	0.05	0.16	3.58	< 0.001
19. EE.T1 → WE.T2 → WE.T3	-0.14	0.04	-0.22	-0.08	-3.94	< 0.001
20. EE.T1 → EE.T2 → WE.T3	-0.13	0.04	-0.21	-0.06	-3.32	0.001
21. WE.T1 → EE.T2 → EE.T3	0.03	0.03	-0.02	0.09	1.15	0.261
22. WE.T1 → EE.T2 → WE.T3	-0.02	0.02	-0.05	0.01	-1.11	0.289
23. WE.T1 → WE.T2 → EE.T3	-0.11	0.03	-0.17	-0.06	-4.12	< 0.001
24. R.T1 → EE.T2 → EE.T3	-0.14	0.05	-0.25	-0.04	-2.86	0.005
25. R.T1 → EE.T2 → WE.T3	0.07	0.03	0.02	0.16	2.21	0.034
26. R.T1 → WE.T2 → EE.T3	-0.00	0.03	-0.06	0.07	-0.01	0.995
27. R.T1 → WE.T2 → WE.T3	0.00	0.05	-0.09	0.09	0.01	0.995

Notes. SE = standard error; CI = confidence interval based on bootstrapping; LL = lower limit; UL = upper limit; WE.T1 = work engagement Time 1; EE.T1 = employee engagement Time 1; R.T1 = resilience Time 1; WE.T2 = work engagement Time 2; EE.T2 = employee engagement Time 2; R.T2 = resilience Time 2; WE.T3 = work engagement Time 3; EE.T3 = employee engagement Time 3; R.T3 = resilience Time 3; **p* < .05, ***p* < .01, ****p* < .001. Parameters of direct pathways represent standardized estimates.

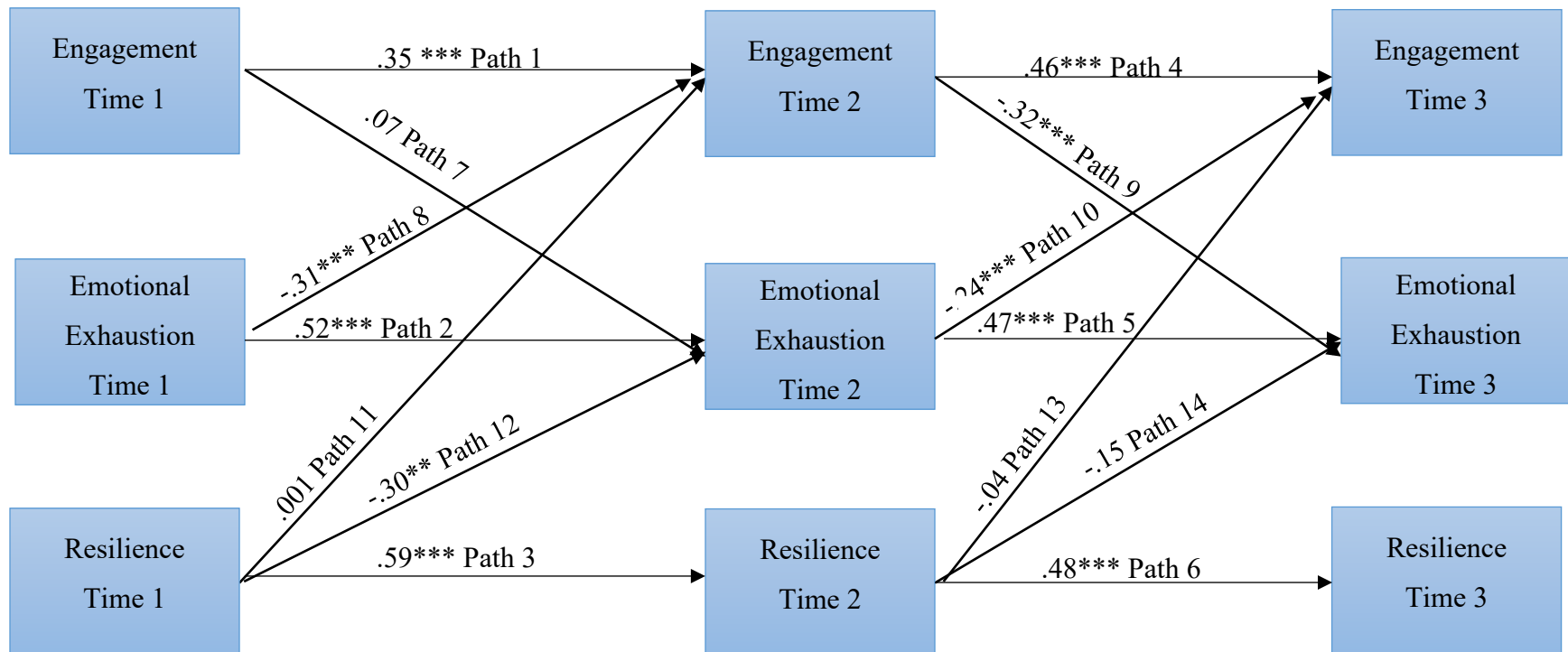


Figure 1. Main Path Model Results.

Note. Fit indices: ($\chi^2 = 22.35$ [$df = 13$], $p = 0.05$, robust CFI = .979, robust SRMR = .061, robust RMSEA = .066)

Chapter 5 - Discussion

The current study examined first responders and their experience with work engagement, emotional exhaustion, and resilience. First responders work in a high-stress and high-risk environment, where they are oftentimes exposed to traumatic events as they respond to numerous calls throughout their shift. They face unique job demands and resources, especially during the COVID-19 pandemic, as they provide essential prehospital care. Furthermore, first responders are an understudied population in research on resilience in the workplace (Kossek & Perrigino, 2016). The current study examined the interplay between emotional exhaustion and engagement over time to extend the scope of the burnout model (Maslach & Leiter, 2016) by simultaneously examining the lasting and aggravating effect of emotional exhaustion and the potential buffering effect of engagement. Also, it examined the extent resilience functions as a safeguard in protecting first responders from the overflow of occupational demands. Currently, our understanding of how resilience develops as an unfolding dynamic process at the individual level is still evolving. The study provides a unique insight in regard to a system under an immense amount of pressure, during a global pandemic. The study included three months of cross-lagged data, resulting in a deeper understanding of the interrelations among the study variables over the first surge of COVID-19 cases in the U.S. The study provides practical contributions for preventing burnout, enhancing work engagement, and managing resilience, as well as theoretical contributions.

The overall purpose of this research was threefold. First, the study examined the stability of each respective construct over three months to provide additional evidence of their respective stability. Second, the study examined the interplay between work engagement and emotional exhaustion in first responders. Third, the study examined the relationship resilience has with

work engagement and emotional exhaustion over the span of 3 months. Overall, the hypothesized path model showed a satisfactory fit and most of the hypotheses were fully or partially supported (Figure 1). Hypotheses 1a through 1f examined the overall stability of each construct over three months. These hypotheses were supported, which supports previous research that found these constructs to be stable over time (e.g., Kossek & Perrigino, 2016; Mauno et al., 2007; Schaufeli & Buunk, 2003). The implications of these findings suggest the constructs are relatively stable over time and have moderate relationships between time points as seen in the correlation coefficients in Table 1. However, work engagement shows some fluctuation over time that is worth noting, as the correlation between Time 1 and Time 3 is weak ($r = 0.30$). This suggests things that support and enhance work engagement, such as resources, are important and needed to keep work engagement from decreasing over time, especially in times of uncertainty, such as a global pandemic

The next research objective was examining the interplay between work engagement and emotional exhaustion over three months. Hypothesis 2a examined whether highly engaged individuals at Time 1 would report significantly less emotional exhaustion at Time 2. This hypothesis was not supported. Interestingly, hypothesis 2c, which examined whether highly engaged individuals at Time 2 would report significantly less emotional exhaustion at Time 3 was supported. This offers limited support to the view that reduced burnout is an outcome of work engagement (Hallberg & Schaufeli, 2006). The present study's finding implies that the impact of engagement on emotional exhaustion may not be constant and would be dependent on other conditions. One possible explanation for these findings, based on the JD-R framework, suggests between Times 1 and 2, first responders were likely to perceive the challenges due to the pandemic as unfamiliar, while resources were not adequately ensured. In this early phase of

the pandemic context, engagement was not able to be translated into a psychological resource to cope with emotional exhaustion. However, once first responders became better aware of the pandemic and their organizations developed improved ways to offer resources between Time 2 and Time 3, engagement was able to be translated into another form of psychological resource. Jointly considered, the positive impact of engagement in the prevention of emotional exhaustion should not be assumed or taken for granted. Circumstances that might undermine the positive impact of engagement on emotional exhaustion need to be carefully examined.

The next set of hypotheses examined the emotional exhaustion to work engagement relationship. Hypothesis 2b was supported, which examined whether first responders higher in emotional exhaustion at Time 1 would be significantly less engaged at Time 2. Additionally, hypothesis 2d was supported, which predicted first responders higher in emotional exhaustion at Time 2 would be significantly less engaged at Time 3. These two findings align with previous research which has found that emotional exhaustion is negatively related to work engagement (Schaufeli et al., 2002). Drawing from COR theory, emotional exhaustion is the experience of chronic exposure to a stressful work environment which can signal to workers the need to preserve their resources, thus leading them to less frequently exhibit behaviors associated with work engagement (i.e., vigor, dedication, and absorption).

These findings suggest that emotional exhaustion should be properly managed. The current study results show that unmanaged emotional exhaustion can undermine work engagement, which can result in compromised job satisfaction (Alarcon, 2011; Salvagioni, et al., 2017; Schaufeli & Enzmann, 1998) or performance (Taris, 2006). The hypotheses (H2a and H2c) suggested that work engagement would have a positive impact on emotional engagement, but if

work engagement is declining due to unmanaged or inadequately managed emotional exhaustion, emotional exhaustion can be exacerbated.

The final research objective was to examine the potential safeguarding effect resilience had on developing emotional exhaustion and nurturing work engagement. Of these hypotheses, only hypothesis 3b was significant, which hypothesized first responders with greater resilience at Time 1 would report significantly less emotional exhaustion at Time 2. The same relationship was not significant for resilience at Time 2 and emotional exhaustion at Time 3 (H3d). This suggests the protective impact of resilience on emotional exhaustion was not constant and provides insight into the dynamic process of resilience, which researchers are still seeking to understand. Building upon COR theory, resilience allows one the capacity to minimize the unnecessary draining of resources and efficiently optimize one's resources to cope with challenges. Previous research has suggested that resilience aids in resisting and recovering from stressors (Ong et al., 2006). Combined with the findings from the current study, resilience might be an important psychological resource to deal with emotional exhaustion when the challenges are relatively new, situations are uncertain, and organizational resources are not adequately offered. Another possible interpretation of this finding is that the capacity of resilience may only work most efficiently against developing emotional exhaustion in shorter bursts than long persisting scenarios. Together this suggests that resilience needs to be properly managed as lacking resilience can impede one's adaptation to a challenging situation at an earlier stage. Additionally, this can be associated with increased emotional exhaustion and reduced work engagement (mediation; i.e., Path 25, $B = 0.07$, $SE = 0.03$, $p = 0.03$).

Theoretical Contributions

This research provides the following theoretical contributions. First, the study examined the reciprocal relationship between emotional exhaustion and work engagement over time. Research is still undecided whether work engagement and burnout are antecedents or outcomes of one another. The present study does not solve this debate; however, it does provide some evidence that experiencing emotional exhaustion significantly decreases the future potential for work engagement. Further, it was found that experiencing work engagement has the potential to significantly decrease the likelihood of experiencing emotional exhaustion in the future, in a context that promotes workers' interpretation of engagement as the impetus for their work. Examining reciprocal relationships is important because it can provide insight toward a causal direction (Kemery et al., 1987; Schaubroeck, 1990) and theories suggest the relationships are bidirectional (Schmitt & Bedeian, 1982; Schaubroeck). Specifically, emotional exhaustion is frequently viewed and treated as a stress outcome (Maslach & Leiter, 2017); however, the present study suggests that emotional exhaustion is not the end-outcome. Emotional exhaustion can exacerbate work engagement, which is known to be an important predictor of career satisfaction (Koyuncu et al., 2006). This advances the stressor-stress-strain model and echoes the burnout model of Maslach and Leiter (2016).

Second, this research examined the relationship between resilience, work engagement, and emotional exhaustion. Of the relationships, a path from emotional exhaustion to work engagement turned out to be more consistent than 1) a path from work engagement to emotional exhaustion and 2) a path from resilience to emotional exhaustion. Considering job demands and resources, emotional exhaustion might be simultaneously the outcome of stress (i.e., high demands and low resources) and a type of job demand which can further undermine the

reliability of work engagement. Work engagement may be a form of job resources, but its positive impact may be contingent on certain psychological and organizational contexts. Our understanding of how resilience develops as an unfolding process at the individual level is still evolving. The present study suggests that resilience may also be a form of job resources, but its positive impact may not be persistent over time. There is limited research examining resilience using COR theory (Hartmann et al., 2020). These findings advance COR theory by showing that resilience may be seen as a psychological resource and for a time one is able to draw from their greater collection of resources, in this case resilience, making them less prone to resource loss. This scenario aids in explaining the finding of resilience contributing to the mitigated emotional exhaustion at the earlier phase of the study. However, when there are threats of resource loss, such as the ongoing pandemic, first responders switch to conserving their resources (i.e., resilience). Alternatively, perhaps individuals switch which psychological resource they engage with most frequently to conserve resources. In conjunction with the findings regarding the role of resilience, it is worth noting that work engagement at Time 1 had a non-significant relationship with emotional exhaustion at Time 2; however, work engagement at Time 2 had a significant and negative relationship with emotional exhaustion at Time 3. Taken together, it is possible first responders engage in conserving their resources by alternating which psychological resource they are relying on most heavily.

Practical Contributions

The study contributes practically, by utilizing a unique and understudied population of first responders (Kossek & Perrigino, 2016) and examining the relationship between salient variables of resilience, emotional exhaustion, and work engagement. Additional practical contributions from the study include a deeper understanding of the engagement and burnout

experience of first responders during an adverse event. The finding that emotional exhaustion has a consistently significant negative relationship with future work engagement demonstrates the need for departments to address burnout, as emotional exhaustion is often the catalyst to burnout (Alarcon, 2011; Taris et al., 2005). Meanwhile, burnout is associated with a host of negative outcomes such as reduced performance (Taris, 2006), increased workplace injuries (Leiter & Maslach, 2008), and greater risk of patient mortality (Aiken et al., 2002) that in turn have a real impact on the performance of first responders and the care they provide.

Practically, departments can adhere to previous best practice research on burnout interventions by utilizing a combination of person-directed and organization-directed intervention program, which have seen the longest lasting positive effects (Awa et al., 2010). Person-directed interventions to reduce and prevent emotional exhaustion include cognitive-behavioral interventions and interventions based on relaxation techniques (Maricuțoiu et al., 2016). Additionally, increasing personal resources, such as engaging in recreational activities, self-care activities, social support from one's personal life, and cognitive coping skills have been found to help protect against emotional exhaustion and burnout (Emery et al., 2009). Organization-directed interventions include increasing resources. One resource that has demonstrated significant relationships with all three dimensions of burnout is control (Lee et al., 2011). The extent to which organizations provide control to their employees will depend on context, such as control over treatment, case management, work tasks, and schedule. Another resource identified is support, which can come from different sources at work such as coworker support and supervisor support (Rupert et al., 2015).

Additionally, the finding that work engagement at Time 2 significantly reduces the probability of experiencing emotional exhaustion at Time 3 suggests that departments should

ensure they enhance organizational resources and organizational support to promote work engagement which in turn can combat the experience of emotional exhaustion. Longitudinal research on work engagement interventions have found that interventions of job resources at the group level, leader level, and organizational level predict work engagement over time (Lesener et al., 2020). Interventions that focus on the organizational level resources, such as how the work is organized, designed, and managed have shown to be the most effective in driving work engagement (Lesener et al., 2020). Organization level interventions should be implemented using participatory approaches (Day & Nielsen, 2017) such that both employees and managers define the process, methods, and outcomes together to bring about changes to the work design.

Examining the longitudinal experience of resilience has provided evidence of its moderate level of stability. The results show experiencing resilience at Time 1 helped to significantly reduce emotional exhaustion for first responders at Time 2. This finding suggests that organizations can facilitate resilience through occupational and managerial support. Leadership can communicate, provide social support, as well as a supportive environment that can aid in boosting levels of resilience. The results indicate that resilience at Time 2 did not significantly reduce the likelihood of experiencing emotional exhaustion at Time 3. This finding suggests that resilience may be effective in the short term, but as adversity continues to persist, resilience becomes less salient. Relying on first responders' resilience to upkeep their wellbeing may not be a sustainable strategy. Leadership additionally can provide other types of recovery and support to those who may lack resilience and further prevent the need for workers to use resilience.

Researchers have yet to agree whether resilience is a state or trait (Kossek & Perrigino, 2016; Richardson, 2002) and whether resilience is stable over one's life or changes over time

(Davydov et al., 2010; Hartmann et al., 2020). This research adopted the process conceptualization of resilience as this perspective allows one to look at temporal and developmental aspects which are important in studying resilience (Fisher et al., 2019). Resilience as a dynamic process of adaptation can potentially be trained (Chmitorz et al., 2018). While resilience training programs include a variety of methods and procedures, studies of resilience interventions are limited to properly assessing their efficacy through meta-analysis (Chmitorz et al., 2018). However, the following are a few takeaways from resilience training and intervention programs. Vanhove and colleagues (2016) found identifying individuals at risk of lower resiliency was most effective. As such, organizations may want to assess their employees for resilience to be able to strategically identify those with lower resilience and work to increase their resilience. Resilience building programs can be on an individual level such as coaching or group level like a classroom style. Additionally, in person programs are more effective than online delivery formats (Vanhove et al., 2016). Resilience training programs utilize methods of discussion, role playing, and practical exercises with homework to reinforce the content (Helmreich et al., 2017). Resilience interventions can range from a variety of methods such as cognitive-behavioral therapy, mindfulness therapy, and stress inoculation (Helmreich et al., 2017). Organizations may wish to bring in a consultant to help them build resilience in their employees through these various interventions and programs.

Limitations and Future Research Directions

One of the limitations of the current study is the examination of a specific population during a unique point in time, a global pandemic, which might make the results less generalizable. However, first responders play a pivotal role in our society in providing prehospital care; therefore, it is necessary to maintain a healthy and stable workforce of first

responders to meet emergency and non-emergency care. First responders work in a high-stress and high-risk environment, and as this study and others have shown (e.g., Boland et al., 2018; Crowe et al., 2018) are vulnerable to experiencing burnout which could in turn threaten the workforce stability of these essential workers (Crowe et al., 2018). The current study examines a critical role and system under a great deal of stress, which is likely to either help them navigate future stressful situations or provide a more experienced insight as more large-scale adversities arise (e.g., another pandemic, terrorist attacks, consequences from global warming). Further, departments may learn from the current situation and develop new policies or procedures to better handle large adversities in the future. The current study provides insight into this unique time regarding the key study variables and the role they have in the well-being of first responders. The study findings may be context specific, especially as resilience has been found to vary by context and time (Davydov et al., 2010). Future research should examine the study model on first responders during a time post-pandemic to see if the results replicate. Additionally, examining the study variables on alternative samples would provide further evidence for the contextual significance of resilience.

The hypothesized relationship between resilience and burnout, while significant from Time 1 and Time 2, did not replicate between Time 2 and Time 3. This finding is unexpected and worth further investigation as to the longevity of resilience in safeguarding against developing emotional exhaustion. This finding may be a relic of the unique sample, in that the sample reported high resilience levels at each of the three time points. Different time interval schemes (e.g., daily diary study approach or more than the one-month interval between the measures) can be considered to fully capture the dynamic attributes of the joint interplay among resilience, engagement, and emotional exhaustion.

The hypothesized relationship between initial work engagement at Time 1 and emotional exhaustion at Time 2 was not supported. This finding might be impacted by when the study was conducted, during a global pandemic, as previous research has found that work engagement is significantly negatively related to burnout (e.g., Hallberg & Schaufeli, 2006; Koyuncu et al., 2006; Schaufeli et al., 2002). Future research should examine the reciprocal relationship between work engagement and emotional exhaustion in non-pandemic or more conventional work conditions to see if the findings replicate. Additionally, future research should examine the cross-lagged relationship between work engagement and emotional exhaustion with a different sample to see if the results replicate.

The relatively small sample size is another limitation. There were practical limitations to obtaining repeated measure data from first responders during the pandemic and this study suffered from approximately 74% attrition rate. Future studies could analyze a larger sample including more departments. A study with more departments could provide interesting and useful information as each department may have unique organizational demands and resources other than the individual level demands and resources examined in the present study.

Further, a limitation of the current study is the lack of consideration of potential moderators. For model parsimony potential interactions among the study variables and other potential moderator variables were not considered; however, future research could consider individual differences such as work-family balance, personality, coping style and organizational variables such as leadership, communication, and training which may have unique relationships with the key study variables. Additionally, examining other outcomes of mental health or wellbeing such as job satisfaction can be incorporated into the model to verify the potential impact of the joint interplay among resilience, engagement, and emotional exhaustion.

Conclusion

This study examined a unique population, first responders, during an extraordinary time, a global pandemic. The purpose of this research was threefold. First, the study examined the stability of each respective construct, work engagement, emotional exhaustion, and resilience, over three time points. Second, the study examined the reciprocal relationship between engagement and emotional exhaustion over time. Third, the study examined the cross-lagged relationship between resilience and, respectively, work engagement and emotional exhaustion over time. The results support the stability of each of the three constructs over three months, though to a limited extent. Additionally, emotional exhaustion was significantly negatively related to work engagement consistently over the three time points. While the relationship between work engagement and future reduced levels of emotional exhaustion was only partially supported. The relationship between resilience and safeguarding against future emotional exhaustion was also only partially supported. The insight gained from this study illustrates the need to provide job resources to support first responders as they aid in driving work engagement (e.g., Schaufeli & Bakker, 2004), resilience (e.g., Kuntz et al., 2017), and reduces the chance of developing emotional exhaustion (Sonnentag, 2015). The findings from this research provide theoretical and practical contributions which can help in navigating future large-scale adversities. Theoretically, the study advances the stressor-stress-strain model and echoes the burnout model of Maslach and Leiter (2016) by demonstrating that emotional exhaustion is not only an end-outcome and has a significant impact on future levels of work engagement. This consistent relationship between emotional exhaustion and reduced future work engagement highlights the need for departments to address burnout before it burgeons. The study also expands our understanding of COR theory with regards to the potential of resilience as a personal and

dynamic psychological resource. These findings shed lights on the first responders' unique experience with resilience, work engagement, and emotional exhaustion while navigating a global pandemic over time and provide insights for the strategies to promote their psychological health and wellbeing.

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Appendix A - Model Parsimony

The sample size and complexity of the model may also be seen as a limitation due to statistical power. The current study uses the “10-times rule” which has been widely used as a guideline for determine sample size (e.g., Kline, 1998; Hair et al., 2011). The full model, which includes 14 pathways, meets this guideline.

Appendix B - Supplementary Post Hoc Analyses

A series of supplementary post hoc analyses were conducted using jamovi version 1.6 (2021) to ensure the quality of the data. The first set of supplementary post hoc analyses examined three different path analyses that included alternative time points. For the hypotheses testing, the current study utilized the first three time points of a larger study. This was chosen due to sample size and the need for a parsimonious model. Additionally, these time points were chosen as I estimated there would be a greater reactivity to the pandemic at the earlier phases of data collection. For example, first responders may hit a ceiling effect after a couple of months or, alternatively, first responders may adapt to the pandemic. To account for this, a series of path analyses were conducted to see if the model fit the data well when using different time points and if there were consistent patterns with the results across the different time windows. The model fit indices for the post hoc path analyses models can be found in Table 6. Post Hoc Model 1 had the same hypothesized relationships as the hypothesized model, however the time points assessed were Time 1, Time 3, and Time 5. This model did not fit the data well. Nevertheless, the model had similar path coefficients with the hypothesized model (Table 6). Next, Post Hoc Model 2 had the same hypothesized relationships as the hypothesized model, however the time points assessed were Time 2, Time 4, and Time 6. Post Hoc Model 2 indicated good fit (Table 7). The model shared some similar path coefficients with the hypothesized model; however, differences were identified in the resilience at Time 2 having a negative relationship with work engagement at Time 4. Additionally, Work engagement at Time 2 followed the hypothesized relationship by negatively effecting burnout at Time 4 (see Table 7 for complete parameter estimates). Post Hoc Model 3 examined the Time 1 variables and their effect on the Time 3

variables in the hypothesized model. Post Hoc Model 3 had adequate fit (Table 8). Path coefficients can be found in Table 9.

The last post hoc analysis conducted was a multigroup path analysis. This was done to examine if the model fit generally well to the data across the three department. The model indicated good fit ($\chi^2 = 44.72$ [$df = 39$], $p = 0.24$, robust CFI = 0.99, robust SRMR = 0.063, robust RMSEA = 0.049). Due to the small sample size per department (department 1 $n = 121$, department 2 $n = 20$; department 3 $n = 67$), the path coefficients were not interpreted as they may be unreliable. Further, the goal of the present study was to find more general patterns of interrelations among the study variables instead of shedding light on the uniqueness of each department.

Table 5.
Post Hoc Model Fit Indices.

	χ^2	<i>df</i>	<i>p</i>	CFI	SRMR	RMSEA	RMSEA 90%CI	
							Lower	Upper
Post Hoc Model 1	108.78	13	< 0.001	0.778	0.099	0.210	0.175	0.247
Post Hoc Model 2	22.91	13	0.043	0.977	0.052	0.065	0.012	0.107
Post Hoc Model 3	6.713	2	0.035	0.973	0.048	0.117	0.027	0.219

Notes. *df* = degrees of freedom; CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CI = confidence interval.

Table 6.

Parameter Estimates for Post Hoc Model 1

Pathway	<i>B</i>	<i>SE</i>
1. Engagement Time 1 → Engagement Time 3	0.17 [†]	0.10
2. Emotional Exhaustion Time 1 → Emotional Exhaustion Time 3	0.45 ^{***}	0.09
3. Resilience Time 1 → Resilience Time 3	0.45 ^{***}	0.08
4. Engagement Time 3 → Engagement Time 5	0.51 ^{***}	0.09
5. Emotional Exhaustion Time 3 → Emotional Exhaustion Time 5	0.64 ^{***}	0.07
6. Resilience Time 3 → Resilience Time 5	0.52 ^{***}	0.09
7. Engagement Time 1 → Emotional Exhaustion Time 3	-0.03	0.09
8. Emotional Exhaustion Time 1 → Engagement Time 3	-0.24 ^{**}	0.08
9. Engagement Time 3 → Emotional Exhaustion Time 5	-0.02	0.06
10. Emotional Exhaustion Time 3 → Engagement Time 5	-0.18 [*]	0.09
11. Resilience Time 1 → Engagement Time 3	0.16	0.11
12. Resilience Time 1 → Emotional Exhaustion Time 3	-0.20 [†]	0.11
13. Resilience Time 3 → Engagement Time 5	0.08	0.12
14. Resilience Time 3 → Emotional Exhaustion Time 5	0.002	0.10

Notes. [†] $p < .10$; ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$. Parameters of direct pathways represent standardized estimates.

Table 7.

Parameter Estimates for Post Hoc Model 2

Pathway	<i>B</i>	<i>SE</i>
1. Engagement Time 2 → Engagement Time 4	0.55 ^{***}	0.06
2. Emotional Exhaustion Time 2 → Emotional Exhaustion Time 4	0.41 ^{***}	0.06
3. Resilience Time 2 → Resilience Time 4	0.52 ^{***}	0.07
4. Engagement Time 4 → Engagement Time 6	0.53 ^{***}	0.09
5. Emotional Exhaustion Time 4 → Emotional Exhaustion Time 6	0.66 ^{***}	0.07
6. Resilience Time 4 → Resilience Time 6	0.41 ^{***}	0.09
7. Engagement Time 2 → Emotional Exhaustion Time 4	-0.30 ^{***}	0.05
8. Emotional Exhaustion Time 2 → Engagement Time 4	-0.37 ^{***}	0.06
9. Engagement Time 4 → Emotional Exhaustion Time 6	0.05	0.08
10. Emotional Exhaustion Time 4 → Engagement Time 6	-0.09	0.09
11. Resilience Time 2 → Engagement Time 4	-0.26 ^{**}	0.10
12. Resilience Time 2 → Emotional Exhaustion Time 4	-0.15	0.12
13. Resilience Time 4 → Engagement Time 6	-0.02	0.13
14. Resilience Time 4 → Emotional Exhaustion Time 6	0.24 [†]	0.12

Notes. [†] $p < .10$; ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$. Parameters of direct pathways represent standardized estimates.

Table 8.

Parameter Estimates for Post Hoc Model 3

Pathway	<i>B</i>	<i>SE</i>
1. Engagement Time 1 → Engagement Time 3	0.17 [†]	0.10
2. Emotional Exhaustion Time 1 → Emotional Exhaustion Time 3	0.45 ^{***}	0.09
3. Resilience Time 1 → Resilience Time 3	0.45 ^{***}	0.08
4. Engagement Time 1 → Emotional Exhaustion Time 3	-0.03	0.09
5. Emotional Exhaustion Time 1 → Engagement Time 3	-0.24 ^{**}	0.08
6. Resilience Time 1 → Engagement Time 3	0.16	0.11
7. Resilience Time 1 → Emotional Exhaustion Time 3	-0.20 [†]	0.11

Notes. [†] $p < .10$; * $p < .05$, ** $p < .01$, *** $p < .001$. Parameters of direct pathways represent standardized estimates.

Appendix C - Study Material

Resilience (Campbell-Sills & Stein, 2007)

Responses reported on a 5-point Likert-type scale (1 = Not true at all, 2 = Rarely true, 3 = Sometimes true, 4 = Often true, 5 = True nearly all the time)

Items:

- 1) I am able to adapt when changes occur
- 2) I can deal with whatever comes my way
- 3) I try to see the humorous side of things when I am faced with problems.
- 4) Having to cope with stress makes me stronger.
- 5) I tend to bounce back after illness, injury, or hardships.
- 6) I believe I can achieve my goals, even if there are obstacles.
- 7) Under pressure, I can stay focused and think clearly.
- 8) I am not easily discouraged by failure.
- 9) I think of myself as strong person when dealing with life's challenges and difficulties.
- 10) I am able to handle unpleasant or painful feelings like sadness, fear or anger.

Engagement (Schaufeli et al., 2002b)

Ratings were provided on a 5-point Likert-type scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always).

1. I feel bursting with energy.
2. I feel strong and vigorous.
3. I am proud of the work that I do.
4. I find the work that I do full of meaning and purpose.
5. Time flies when I do this kind of work.

6. I am immersed in my work.

Emotional Exhaustion (Maslach & Jackson, 1981; Taylor et al., 2019)

Seven items of the MBI were adopted by Taylor et al. (2019) to address the specific population.

Ratings were provided on a 5-point Likert-type scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always).

1. I feel emotionally drained from this kind of work.
2. I feel used up at the end of the run.
3. I feel fatigued when I get up in the morning and have to face another day on the job.
4. I feel burned out doing this kind of work.
5. Working with people all day is really a strain for me.
6. I feel frustrated by my job.
7. I feel I'm working too hard on my job.
8. Working with people directly puts too much stress on me.
9. I feel like I'm at the end of my rope.