

2016

Predictive Factors of Compassion Fatigue Among Firefighters

Teresa Michelle Robinson
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

 Part of the [Social and Behavioral Sciences Commons](#), and the [Vocational Rehabilitation Counseling Commons](#)

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Social and Behavioral Sciences

This is to certify that the doctoral dissertation by

Teresa Robinson

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Eric Youn, Committee Chairperson, Human Services Faculty
Dr. Gregory Hickman, Committee Member, Human Services Faculty
Dr. Scott Hershberger, University Reviewer, Human Services Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2016

Abstract

Predictive Factors of Compassion Fatigue Among Firefighters

by

Teresa M. Robinson

MA, Grand Canyon University, 2008

BS, Spring Arbor University, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Human Services

Walden University

July 2016

Abstract

Few existing studies have examined compassion fatigue among emergency responders even though firefighters and emergency medical service (EMS) professionals have repetitive direct exposure to traumatic events. This study focused on identifying predictor variables for the development of compassion fatigue in firefighters. Karasek's demand-control model, a commonly used work stress model, was the study's theoretical framework as it focuses on specific construct interactions that predict employee well-being. Accordingly, this correlational study examined the predictive nature of EMS license level, years of service, and personality type on the development of compassion fatigue in career firefighters. Data collection occurred with surveys incorporating the Professional Quality of Life Scale and the Big Five Inventory. Mid-Michigan fire departments participated with 129 career firefighters returning completed surveys with results analyzed using logistic regression. Findings revealed a significant predictive relationship between personality traits and the development of compassion fatigue. These findings can inform preventative measures that protect the psychological well-being of these emergency responders by informing and educating the professionals and organizations as to who is at greatest risk and ultimately providing opportunity for risk mediation.

Predictive Factors of Compassion Fatigue Among Firefighters

by

Teresa M. Robinson

MA, Grand Canyon University, 2008

BS, Spring Arbor University, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Human Services

Walden University

July 2016

Dedication

I dedicate this study to the men and women in the fire service who unselfishly risk their own lives every day to serve others in times of great need and tragedy.

Acknowledgments

I would like to acknowledge my two wonderful children, family, and friends for all the support they gave and sacrifices they made during my doctoral journey.

Additionally, I would also like to acknowledge my committee for the guidance and expertise they provided to foster my successful completion.

Table of Contents

List of Tables	iv
Chapter 1: Introduction to the Study.....	1
Background	3
Compassion Fatigue.....	4
Mediating Factors	6
Problem Statement	9
Purpose of the Study	12
Research Question and Hypotheses	13
Theoretical/Conceptual Framework for Study.....	14
Demand-Control Theoretical Model.....	14
Nature of the Study	15
Definitions.....	17
Scope	17
Limitations	18
Delimitations.....	18
Significance.....	19
Summary	20
Chapter 2: Literature Review	22
Literature Review.....	22
Literature Search Strategy.....	23
Theoretical Foundation	24

Compassion Fatigue.....	26
Vicarious Traumatization.....	29
Countertransference	30
Burnout	31
Compassion Satisfaction.....	33
Mediating Factors	33
Personality.....	36
Summary	38
Chapter 3: Research Method.....	39
Research Design.....	39
Methodology	41
Population	41
Sampling Strategy.....	41
Sample Size Calculation	43
Recruitment, Participation, and Data Collection Procedures.....	45
Survey and Internet Research Methods	45
Instrumentation and Operationalization of Concepts	47
Data Analysis Plan.....	50
Ethical Procedures	51
Summary	52
Chapter 4: Results	54
Research Tools.....	54

Data Collection	55
Sample Characteristics.....	56
Assumption Testing	60
Results.....	61
Summary	65
Chapter 5: Discussion, Conclusions, and Recommendations.....	66
Interpretation of the Findings.....	67
Theoretical Framework.....	70
Limitations of the Study.....	71
Recommendations.....	72
Implications.....	73
Conclusions.....	77
References.....	79
Appendix A: Big Five Inventory	89
Appendix B: Professional Quality of Life Scale.....	92

List of Tables

Table 1. Means and Standard Deviations of Variables.....	55
Table 2. Demographic Characteristics of Participants.....	60
Table 3. Logistic Regression: Predicting Compassion Fatigue	62
Table 4. Correlation Matrix of Variables.....	63
Table 5. Classification Table: Predicting Compassion Fatigue	65

Chapter 1: Introduction to the Study

Introduction

Emergency responders, such as firefighters, work in professions that regularly involve traumatic events placing them at risk of becoming victims themselves (Cacciatore, Carlson, Michaelis, Klimek, & Steffan, 2011; Tuckey & Hayward, 2011). Researchers have focused on identifying the risk associated with the intense demands of the firefighting profession, protective factors, and the need to provide for the psychological well-being of these helping professionals (Argentero & Setti, 2011; Lourel, Abdellaoui, Chevaleyre, Paltrier, & Gana, 2008; Papovic, 2009). However, further research to understand the effect such work has on firefighters and the components that increase their risk of stress disorders can be an important component in protecting their psychological well-being.

Rescue workers such as firefighters are not immune to negative effects from the trauma they encounter in their professional role just because they train to respond repeatedly to such crises (Morren, Dirkzwager, Kessels, & Yzermans, 2007). The public and the firefighters themselves may hold an impression that emergency responders are individuals who respond when something bad has happened to work diligently towards saving life and property while remaining unaffected by the emotions of the situation. However, the aftermath of the World Trade Center disaster was an extensive demonstration of the emotional drain such work can actually have on emergency responders. In a study examining help seeking behavior of New York City firefighters who responded to the World Trade Center disaster, 97% of survey respondents reported

feelings about that day reemerging with any reminder of the event, and a considerable number of respondents had experienced an array of distress symptoms since the event (Vashdi, Bamberger, & Bacharach, 2012).

Understanding predictors, which increase the odds of developing negative effects such as compassion fatigue and burnout, can allow for proactive efforts providing for the psychological well-being of those individuals relied upon in times of crises. Identifying variables that place firefighters at risk is only the first step, as the utilization of these findings would enact necessary change in the work environment in order to enact positive social change. The learning environment of the workplace facilitates the identities firefighters hold along with how they view their capabilities, their drive, and their cognitive skills (Dirkx, Gilley, & Gilley, 2004). This environment may prepare the responders for the emerging threats, traumas, and crises that they face but it may not equally prepare them for the psychological impact that can accompany their changing roles. The choice for these individuals to become emergency responders implies an ability to handle the challenging situations they will have to face, but the implied resiliency can contribute to occurrence of intense reactions to incidents encountered (Evans, Patt, Giosan, Spielman, & Difede, 2009). The development of compassion fatigue can negatively affect job performance (Cacciatore et al., 2011) reducing the firefighter's ability to optimally function on emergency scenes. This increases risks for both the emergency responder and the citizens to which they are responding. Social change occurs when efforts can be made to protect the psychological well-being of the emergency responders the public relies upon in their times of need.

Background

Studying the risk level for compassion fatigue in professional firefighters could allow preventative measures to be developed. Many studies focus on coping measures, efficacy, (Prati, Pietrantonio, & Cicognani, 2010, 2011) and social support systems (Argentero & Setti, 2011) as mitigating factors in the development of disorders such as compassion fatigue. In this study, I expanded upon current research to include predictor variables that increase risk.

A review of existing research identified studies focusing on firefighters and other emergency response workers in relation to stress disorders such as compassion fatigue, burnout, secondary traumatization, vicarious traumatization, and posttraumatic stress disorder (PTSD). Some researchers have placed focus on coping strategies and the influence efficacy, self and collective, had on the development of adverse psychological effects because of work as an emergency responder (Cicognani, Pietrantonio, Palestini, and Prati, 2009; Prati et al., 2010, 2011). Researchers also conducted studies on the relationships between the development of burnout (Lourel et al., 2008) or vicarious traumatization (Argentero & Setti, 2011) and the number of job demands and amount of job control the firefighter experiences. Additionally, clear definitions established for burnout (Papovic, 2009), compassion fatigue (Berzoff & Kita, 2010), and vicarious traumatization (Argentero & Setti, 2011) allow for understanding of pertinent components and appropriate interventions.

The existing pool of research on compassion fatigue and its presence in and effects on firefighters provides a strong base to inform further research. However, in the

review of existing research, I found a gap exists in examining compassion fatigue among firefighters. Consequently, this gap or lack of research presents a problem in developing preventative measures to protect the psychological well-being of these emergency responders. Hence, the purpose of this quantitative correlational study was to test the predictive nature of personality type, emergency medical services (EMS) license level, and years of service in relation to development of compassion fatigue in firefighters. Research currently exists on the elements comprising this construct. Thoroughly understanding the conducted research and acquired knowledge on these elements provided foundation and guidance for this study.

Compassion Fatigue

Some researchers use several terms interchangeably to refer to the phenomenon of compassion fatigue while others provide clear distinctions amongst them. Vicarious traumatization (VT), secondary traumatic stress disorder (STS), and compassion fatigue (CF) are terms used by some researchers to refer to the psychological distress experienced as an occupational hazard of working with traumatized patients (Bride, Radey, & Figley, 2007; Craig & Sprang, 2010; Prati et al., 2010). However, others have claimed that it is important to differentiate CF from other similar concepts such as countertransference (Berzoff & Kita, 2010) or burnout (Cicognani et al., 2009).

CF is defined in current research as the reactions that develop from overexposure to patient suffering (Berzoff & Kita, 2010), a more comprehensible term for describing STS (Bride et al., 2007), and the “cognitive-emotional-behavioral changes” that the provider experiences as a result of their exposure to trauma survivors (Craig & Sprang,

2010, p. 320). VT, the first term developed and sometimes currently used interchangeably with CF, is a term used to identify this phenomenon of transformation resulting from work with traumatic events and traumatized patients (Craig & Sprang, 2010). Definitions of VT found in existing research include the change of cognitive representations and belief system occurring from empathic connections with victims of traumatic events (Bride et al., 2007; Craig & Sprang, 2010) and the stress from providing care to individuals who are suffering or have experienced a traumatic event (Argentero & Setti, 2011). A definition exists for STS disorder as the natural and consequential behaviors and feelings that occur because of awareness of a traumatic event experienced by a significant other or the desire to help others affected by trauma (Bride et al., 2007; Craig & Sprang, 2010). In an effort to establish an differentiation amongst these terms that are often used interchangeably, Craig and Sprang (2010) provided a simplification defining vicarious trauma as “changes in cognitive schemata” and STS and CF as “socioemotional symptoms” (p. 320).

Additionally, CF has shared characteristics with countertransference (Berzoff & Kita, 2010) and burnout (Cicognani et al., 2009) but these are each different phenomenon. Countertransference and CF are differentiated based on the concept that CF is the therapist or professional’s absorption of the emotional distress of the patients traumatic experience whereas, countertransference is the therapist or professional’s negative response to the suffering the patient is experiencing (Berzoff & Kita, 2010). Burnout differentiates from CF as it presents as overpowering exhaustion, negative feelings and separation from job, and feelings of ineffectiveness resulting from long-

term, extensive exposure to job stress (Cicognani et al., 2009; Papovic, 2009) while CF occurs as an acute response to traumatic work related events (Cicognani et al., 2009).

Mediating Factors

Inferences exist based upon epidemiological evidence that those individuals involved in the initial responses and treatment of individuals impacted by trauma are at high risk for the development of compassion fatigue (Craig & Sprang, 2010). A significant amount of research has been conducted examining mediating or buffering factors in the development of compassion fatigue (Cicognani et al., 2009; Prati et al., 2010, 2011; Tuckey & Hayward, 2011). Researchers have found efficacy, self and collective, to act as mediating factors that can contribute to a positive quality of life for emergency responders (Cicognani et al., 2009; Prati et al., 2010, 2011).

Self-efficacy is part of the self-appraisal that occurs in response to a stressful event as the individual evaluates the perception they hold of their coping abilities (Prati et al., 2010). In regards to an emergency worker's quality of life, self-efficacy plays an instrumental part as the workers' perception of competencies and skills reduces distress and the occurrence of negative traumatic stress outcomes (Cicognani et al., 2009). However, the work environment of regular exposure to crises and trauma of various types and high emotional demands can deplete energy fueling coping abilities (Tuckey & Hayward, 2011) and thus hindering self-efficacy.

The work environment for emergency workers such as firefighters requires collaborative efforts to accomplish tasks and strong levels of collective efficacy (Prati et al., 2011). Collective efficacy refers to how the individuals view the capabilities, efforts,

and skills of the group as it pertains to the group's actions when handling critical situations (Prati et al., 2011). As explained by Tuckey and Hayward (2011), a method of providing protection against the emotional demands of emergency response work is to foster a strong psychosocial work environment to help responders meet the ever-present demands.

Personality can also contribute to coping abilities. An individual's affective personality type can influence vulnerability to stress effects (Arnten, Jansson, & Archer, 2008; Bood, Archer, & Norlander, 2004). Four types of affective personalities (self-destructive, low affective, high affective, and self-actualization) created based on varying combinations of positive and negative affect levels have been examined as to their influence on response to stress (Bood et al., 2004) as some individuals appear more vulnerable to stress effects (Arnten et al., 2008). High positive affect (PA) levels reported by individuals coincided with reports of increased ability to express organizational assertiveness along with high levels of life satisfaction and quality of life (Arnten et al., 2008). Negative affect (NA) reported at high levels correlated with stress symptoms and increased strain over situations perceived as beyond their control (Arnten et al., 2008). Furthermore, individuals found to have personalities low in conscientiousness or high in NA have a higher probability of exhibiting poorly adjusted coping strategies and ineffective work practices (Gyorkos, Becker, Massoudi, De Bruin, & Rossier, 2012). The following findings exhibit support for the main assertions of the study:

1. Argentero and Setti (2011) conducted a similar study examining predictive nature of organizational factors and descriptive variables in the development of VT symptoms.
2. The work presented by Berzoff and Kita (2010) provided differentiation and operationalized definitions of the CF and countertransference concepts.
3. Bride et al. (2007) presented instruments that allow for measurement of risk levels of CF and burnout while also measuring the presence of compassion satisfaction.
4. Cacciatore et al. (2011) demonstrated the growing awareness of CF development in firefighters and the need for intervention.
5. Cicognani et al. (2009) used the indicators of CF, burnout, and compassion satisfaction to operationalize the quality of life concept for rescue workers.
6. Lourel et al. (2008) applied the demand-control model to firefighters to examine the relationship between psychological job demands, job control, and burnout.
7. Papovic (2009) conducted a case study focused on gaining understanding the components of which helping professionals experience burnout.
8. Prati et al. (2010) demonstrated the role self-efficacy plays as a mediating factor between stress and the quality of life of rescue workers experienced.
9. Prati et al. (2011) examined the mediating role coping strategies and collective efficacy play between stress and quality of life exhibited by rescue workers.
10. Tuckey and Hayard (2011) showed the relationship between existing emotional demands and resources in the organization and the resultant effect on psychological strain and burnout.

Problem Statement

Firefighters are emergency response workers whose jobs regularly involve exposure to traumatic events and trauma victims (Cicognani et al., 2009) yet have received little research attention in stress-related studies (Lourel et al., 2008). CF is a term used in reference to the negative effects such professionals experience because of their regular exposure to traumatized individuals and traumatic events (Berzoff & Kita, 2010; Bride et al., 2007). Efforts to understand the effect such work has on firefighters can be an important component in protecting the psychological well-being of these emergency responders.

The risk level a firefighter has and the effects they experience from job-related trauma may be associated with personality type. Findings have shown that relationships between personality traits such as extroversion and neuroticism and experienced trauma exposure levels to stress symptom development (LaFauci Shutt & Marotta, 2011). Further support for the potential role of personality in the development of CF and burnout exists showing personality as a contributor to coping abilities. An individual's affective personality type can influence vulnerability to stress effects (Arnten et al., 2008; Bood et al., 2004). Four types of affective personalities (self-destructive, low affective, high affective, and self-actualization) created based on varying combinations of positive and negative affect levels have been examined as to their influence on response to stress (Bood et al., 2004) as some individuals appear more vulnerable to stress effects (Arnten et al., 2008). Furthermore, individuals found to have personalities low in

conscientiousness or high in negative affect have a higher probability of exhibiting poorly adjusted coping strategies and ineffective work practices (Gyorkos et al., 2012).

The amount of time an individual has on the job may influence the extent to which coworker relationships, collaboration, support, and familiarity with each other has developed. The work environment for emergency workers such as firefighters requires collaborative efforts to accomplish tasks and strong levels of collective efficacy (Prati et al., 2011). Collective efficacy refers to how the individuals view the capabilities, efforts, and skills of the group as it pertains to the group's actions when handling critical situations (Prati et al., 2011). As explained by Tuckey and Hayward (2011), a method of providing protection against the emotional demands of emergency response work is to foster a strong psychosocial work environment to help responders meet the ever-present demands.

Additionally, the firefighter's EMS license level influences the types of crises they face as the EMS license level a provider holds dictates the degree and extent of care that individual is able to provide. A Basic Emergency Medical Technician (Basic EMT) completes approximately 150 hours of training in "the use of Automatic External Defibrillators (AED), CPR, oxygen administration, bandaging, splinting, emergency childbirth, nonvisualized airways, and the administration of nitroglycerin, epinephrine with an Epi-pen, aspirin, and activated charcoal" (LifeMed Inc [LifeMed], 2013, para. 3). The Emergency Medical Technician Paramedic (Paramedic) however is a higher level of training. An individual licensed as a paramedic completed approximately 1,500 hours of training which includes the EMT Basic program plus:

the use of manual defibrillation, transcutaneous cardiac pacing, 12 lead ECGs, advanced airway management, including surgical airways, intravenous access, intraosseous access, which involves placing a needle in a bone and using the bone marrow as a fluid and medication route and pharmacology. Additionally, paramedics can perform pleural decompression which is a treatment to reinflate collapsed lungs, CPAP and Rapid Sequence Induction. (LifeMed, 2013, para. 5)

In essence, basic EMTs provide basic life support care whereas paramedics provide advanced life support care for individuals experiencing more serious trauma and emergencies (Tri-County Emergency Medical Control Authority [TCEMCA], 2011). In existing studies, researchers have recognized that the uncontrollable and potentially dangerous environment and conditions in which emergency medical responders operate may result in higher stress situations compared to other health care workers (Revicki & Gershon, 1996) making them highly susceptible to burnout (Vettor & Kosinski, 2000) but they have not analyzed the potential differentiation between license levels.

Development of CF can adversely affect a firefighter's ability to perform their job (Tuckey & Hayward, 2011). The effects of CF, especially that which progresses to the level of burnout, can present in physical symptoms such as gastrointestinal disorders or in psychological symptoms such as fatigue and reduced job performance (Argentero & Setti, 2011). Protecting the well-being of the responders who care for individuals amidst a tragic or disastrous event should be of utmost importance. Repetitive exposure to trauma, personality characteristics, and professional factors can contribute to overwhelming emergency responders affecting their ability to perform job functions but

these professionals tend to be unaware or accepting of their need for psychological help (Papovic, 2009).

Multiple instruments such as the Compassion Fatigue Self Test (CFST) and the Professional Quality of Life Scale (ProQOL) exist for measuring the risk of CF including its most severe form known as burnout (Bride et al., 2007). Preventative measures can result from researching potential correlations between the risk level for CF in professional firefighters and the factors of personality type, years of service, and EMS license level as predictor variables. This effort to identify predictor variables will build upon the existing studies that have addressed coping measures, efficacy, (Prati et al., 2010, 2011) and social support systems (Argentero & Setti, 2011) as mitigating factors in the development of disorders such as CF (Cicognani et al., 2009).

The identification of predictor variables is necessary to proactively provide for the well-being of firefighters and prevent the development of CF, resulting from performing their job. However, there is a lack of research that examines risk factors associated with developing CF specifically among firefighters. Consequently, this research gap related to the problem of CF in firefighters complicates developing preventative measures to protect the psychological well-being of these emergency responders. In this study, I tested the predictive nature of personality type, EMS license level, and years of service in relation to firefighters' development of compassion fatigue.

Purpose of the Study

Predictor variables that identify an emergency responder's risk of developing CF have not received much attention in existing research. Instead, researchers have focused

on identifying the risk associated with the intense demands of the firefighting profession, protective factors, and the need to provide for the psychological well-being of these helping professionals (Argentero & Setti, 2011; Lourel et al., 2008; Papovic, 2009). Studying the predictability of firefighters developing CF based on the variables of personality type, years of service, and EMS license level as predictors could allow for proactive measures to be developed.

Many researchers have focused on coping measures, efficacy, (Prati et al., 2010, 2011) and social support systems (Argentero & Setti, 2011) as mitigating factors in the development of disorders such as CF (Cicognani et al., 2009). However, the identification of predictor variables is necessary to proactively provide for the well-being of firefighters and prevent the development of CF resulting from performing their job. Hence, the purpose of this quantitative correlational study was to discover the likeliness of CF developing based on personality type, EMS license level, and years of service for professional firefighters.

Research Question and Hypotheses

What is the predictive nature of personality type, years of service, and EMS license level on the development of compassion fatigue in firefighters?

Ho: No linear relationship exists between personality type, years of service, and EMS license level and the development of compassion fatigue among firefighters.

HA: A linear relationship exists between at least one of the predictor variables and the development of compassion fatigue among firefighters.

Theoretical/Conceptual Framework for Study

In examining the concept of CF in firefighters, the theoretical framework consisted of conceptual and operational definitions (Latham, 2015). In this study, I sought to examine the relationship between CF development and the personal and occupational components of personality type, years of service, and EMS license level. Using empirical referents of the concepts, operational definitions describe procedures I used in establishing to what extent the phenomenon associated with the concept exists (Latham, 2015). Conceptually, CF and burnout comprised the two negative dimensions of a rescue worker's quality of life whereas compassion satisfaction represented the positive dimension (Prati et al., 2011).

This conceptualization requires the operationalization of concept terms and components to allow for research. Operationally, the negative and positive effects of rescue work was assessed for the level at which they are present in rescue workers with the use of measurement instruments such as the ProQOL (Bride et al., 2007). Additionally, the derived conceptual terms such as personality become primitive terms when discussed as specific personality types identified through operationalization of the concept with use of instrumentation such as the Big Five Inventory (BFI). However, gaining an understanding of the relationship between these variables occurred with the use of a theoretical framework.

Demand-Control Theoretical Model

Theoretical systems relate descriptions, explanations, and predictions in such a way as to allow the formation of derivative propositions from existing propositions

within the framework (Sinclair, 2007). The DC model was the theoretical framework that guided the study. As one of the most commonly used models for work stress, this framework focuses on the interactions between specific constructs leading to predictability of employee well-being (De Jonge, Van Vegchel, Shimazu, Schaufeli, & Dormann, 2010). The outcome variable for the study was CF, including its severe state known as burnout, which can be categorically associated with employee well-being.

Two hypotheses exist in the DC model. The strain, first, hypothesis upholds that high job demands combined with low job control results in job strain; while, the active learning, second, hypothesis predicts that combined high job demands and high job control results in increased motivation, learning, and personal growth (De Jonge et al., 2010). In paralleling these hypotheses to the study, the output represented in the results indicated risks of CF or burnout, which aligned with the outcome of job strain in the first hypothesis or compassion satisfaction. The EMS license level and years of service can affect the job demands the employee experiences and the control he or she may feel in their work environment, which aligned with the outcome of the second hypothesis. Conceptual support of the alignment of these variables exists in the literature review.

Nature of the Study

The study was quantitative with a cross-sectional design focused on examining variables for their predictive qualities in relation to the development of CF in firefighters. Logistic analysis was used to predict the likelihood of a dichotomous variable occurring (StatsProf, 2013) making it an appropriate analysis for this study. Use of cross-sectional designs are common in the field of social sciences to describe the relationship pattern

between variables; surveys are typically used with this design to ask a random sample for responses pertaining to experiences, backgrounds, or attitudes (Mann, 2003). With cross-sectional design, all testing occurs during the same time-period avoiding threats caused by shifts in the nature of the measuring instrument (Campbell & Stanley, 1963).

Using two-level cluster sampling, distribution of questionnaire surveys to all members of the participating fire departments occurred. The first level of clustering identified fire departments comprised of full time firefighters who were also licensed as basic EMTs or paramedics. The selection of clusters, or fire departments, then occurred as the second level of clustering. Additionally, a sample size of 122 was determined by running a chi-square test using GPower with the inputs of effect size = .30, alpha level = .05, power = .80, and $df=3$ (based on variables in my study).

For this study, I considered a combination of group-administered questionnaires and internet delivered survey questionnaires as an approach that provided the greatest benefit. The anonymity provided by filling out a survey rather than a face-to-face interview could have elicited more honest answers from a population concerned with appearing weak to coworkers (Papovic, 2009). Additionally, use of instrumentation such as the ProQOL and BFI instruments, which are in questionnaire form, allowed internet conduction of data collection through mediums such as Survey Monkey. This use of internet survey instruments provided the ability to expand the participant pool easily to include other geographic areas if necessary to increase external validity and generalizability. However, conducting group-administered questionnaires with local fire departments could have provided for increased return rate. Data collection using this

method can greatly increase return rate as distribution of questionnaires to gathered groups provides opportunity for immediate completion of the surveys and clarification of questions asked (Trochim, 2006).

Definitions

Big Five Personality Inventory (BFI): Describes personality in terms of the five factors of extroversion, agreeableness, conscientiousness, neuroticism, and autonomy (Bakker, Van der Zee, Lewig, & Dollard, 2006).

Burnout: A psychological syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment resulting from the demanding and emotionally charged relationships between caregiver and care recipient (Bakker et al., 2006).

Compassion fatigue (CF): The negative consequences of working with traumatized individuals and vicariously experiencing the effects of traumatic life events (Harr, 2013).

Compassion satisfaction: The pleasure derived from work helping and contributing to the well-being of others (Harr, 2013).

Professional Quality of Life Scale (ProQOL): A revision of the original Compassion Fatigue Self Test created by Figley in 1995 that is composed of three subscales measuring compassion satisfaction, compassion fatigue, and burnout (Bride et al., 2007).

Scope

This study applied to career fire departments that also provide the advanced life support EMS services to their response areas in central southern Michigan.

Limitations

Limitations exist related to this study. These include completion rate of questionnaires, availability of firefighting personnel, population size experiencing CF, and honesty of participants. Administration of questionnaires as group-administered surveys while gathered for training could have increased completion rates. However, on-duty personnel's obligation to respond to emergency runs could have also interfered with completion of survey questionnaires. Personnel interrupted while completing forms would have been unlikely to complete and return the questionnaires. Firefighters also tend to be reluctant about sharing revealing personal information associated with the psychological impact of their work.

Delimitations

In this study, I focused on the six fire departments comprising the Lansing, Michigan Metro Area. In comparison to state and national demographics, the fire departments comprising this area are representative of the profession with a 0.86 location quotient (Bureau of Labor Statistics, 2015). Additionally, Michigan fire departments are 9.3% career and 3.8% mostly career which is comparable to the national statistics of 8.3% career and 4.5% mostly career (U. S. Fire Administration, 2015).

In the sample population, two of the fire departments were strictly career fire departments while the other four supplement their career personnel with volunteer firefighters. The fire departments participating in the study were primarily a convenience sample chosen due to accessibility as all the metro fire departments are within 20 miles of each other. One delimitation, however, was the number of full-time firefighters, as four

of the six departments were combination departments using both career and volunteer firefighters. In this study, I targeted career firefighters, as they would have the continuous trauma exposure essential to the purpose of this study.

Significance

Rescue workers such as firefighters are not immune to negative effects caused by the trauma they encounter in their professional role just because they train to respond to such crises (Morren et al., 2007). The public and the firefighters themselves may hold an impression that emergency responders are individuals who rush in when something bad has happened and work diligently towards saving life and property while remaining unaffected by the emotions of the situation. However, the aftermath of the World Trade Center disaster was an extensive demonstration of the emotional drain such work can have on emergency responders. In a study examining help seeking behavior of New York City firefighters who responded to the World Trade Center disaster, 97% of survey respondents reported feelings about that day reemerging with any reminder of the event and a considerable number of respondents have experienced an array of distress symptoms since the event (Vashdi et al., 2012).

Understanding predictors, which increase the odds of developing negative effects such as CF and burnout, can allow for proactive efforts in providing for the psychological well-being of those individuals relied upon in times of crises. Identifying variables that place firefighters at risk is only the first step, as the use of these findings can enact change in the work environment to enact positive social change. The learning environment of the workplace facilitates the identities firefighters hold along with how

they view their capabilities, drive, and cognitive skills (Dirkx et al., 2004). This environment may prepare the responders for the emerging threats, traumas, and crises that they may face but it may not equally prepare them for the psychological impact that may accompany their changing roles. The choice for these individuals to become emergency responders implies an ability to handle the challenging situations they will have to face but the implied resiliency can contribute to occurrence of intense reactions to incidents encountered (Evans et al., 2009).

The significance of this study lies in the potential for implementing psychological health protection efforts for firefighters. For instance, if the study reveals that paramedics in their first 5 years on the job were at high risk for developing CF, then teaching coping methods to this group could act as prevention efforts. The development of CF can negatively affect job performance (Cacciatore et al., 2011) reducing their ability to optimally function on emergency scenes. This increases risks for both the emergency responder and the citizens to which they are responding. Social change occurs when efforts are made to protect the psychological well-being of the emergency responders the public relies upon in their times of need.

Summary

Firefighters provide a valuable service to their communities including facing imminent danger for their own safety while trying to save the lives and property of others. In this chapter, I discussed the psychological risks and stress reactions firefighters can face because of their chosen profession. Discussion included the use of the ProQOL Scale and the BFI to show the connection between the predictor variables and the

development of CF in firefighters. In the next chapter, a literature review will address CF, burnout, personality, the mediating factors contributing to the formation of CF, and the potential relationship between the variables of this study. Chapter 3 describes the research methodology and the instrumentation use for the measurement of CF and personality traits. Chapter 4 is comprised of the study's findings. Finally, in Chapter 5, I review the purpose and findings of the study while also expanding upon the resulting recommendations, implications, and limitations of this research on predicting and preventing CF in firefighters.

Chapter 2: Literature Review

Literature Review

The topic of CF in emergency response workers, particularly firefighters, is of interest for this study. CF is a term used in reference to the negative effects such professionals experience because of their regular exposure to traumatized individuals and traumatic events (Berzoff & Kita, 2010; Bride et al., 2007). Firefighters are emergency response workers whose jobs regularly involve exposure to traumatic events and trauma victims (Cicognani et al., 2009) yet this population has received little research attention in stress-related studies (Lourel et al., 2008). Working to understand the effect such work has on firefighters can be an important component in protecting their psychological well-being. Specifically, I will explore to what extent personality type, years of service, and EMS license level predict the development of CF in firefighters. Research currently exists on the elements comprising this construct. Thoroughly understanding the existing research and acquired knowledge on these elements provides foundation and guidance for the current study.

Researchable topics include the prevalence of CF, effect of personality type on development of CF, relationship between EMS license level and development of CF, and the incidence of CF progressing to burnout. Researchers have focused on identifying the risk associated with the intense demands of the firefighting profession, protective factors, and the need to provide for the psychological well-being of these helping professionals (Argentero & Setti, 2011; Lourel et al., 2008; Papovic, 2009). However, none seems to focus on how big of a problem this stress disorder is for firefighters by checking for and

establishing its prevalence. Additionally, personality traits have been factors in some research but studies for correlations between specific personality types and CF do not seem to exist. Furthermore, evaluating a firefighter's EMS license level as a potential predicting factor of CF does not exist in previous studies and is worthy of exploration.

Literature Search Strategy

In the literature search for this study, I sought to include academic publications, informally published works, and other material that focused on the topic and represented supportive and conflicting information. In preparation for the literature review, I used databases such as Thoreau to conduct broad searches in order to identify best databases and effective search criteria to yield pertinent references. For instance, I began with a search conducted on Thoreau using the criteria of *Firefighter OR EMS OR first responder* in the top search criteria box and *Compassion Fatigue OR burnout* in the box on the second line. This yielded 105 results that I reviewed for applicability to this study. As findings revealed articles of interest, notation was made of the database they derived from, allowing for more thorough searches within those particular databases.

This process resulted in searches in the following databases: CINAHL Plus, MEDLINE, PsycEXTRA, SocINDEX, PsycINFO, and Psyc ARTICLES. Searching within these databases with the key word *compassion fatigue* resulted in 1,110 results. When the search included the secondary keyword group of *firefighter OR emergency responder OR EMT OR paramedic* only 15 results yielded. A subsequent search within the above-mentioned databases using the keywords *compassion fatigue* and *personality* yielded 35 results. A more specific search single keyword search for *Big Five personality*

traits within these databases revealed 1,367 results. However when this keyword was combined with *coping*, the results reduced to 40. All searches included parameters to include only academic journals, journals, and dissertations in search results.

Theoretical Foundation

Theoretical models have been developed for explaining job burnout and health with the most popular being Karasek's DC model (Lourel et al., 2008). This model allows a researcher to examine impact on an employee's health by work. The DC model uses two measurements of work environment, job demands and job control or resources, to express how health impairment may be affected (De Jonge et al., 2010; Lourel et al., 2008). In the traditional model, the variable of job control is the decision latitude the individual experiences (Rubino, Perry, Milam, Spitzmueller, & Zapf, 2012). Empirical research has supported the correlation between high levels of job control and the outcome of low levels of strain such as emotional exhaustion and dissatisfaction (De Jonge et al., 2010; Rubino et al., 2012).

The study by De Jonge et al. (2010) used the DC model to measure specific job demands correlated with corresponding aspects of job control, resultantly identifying the correlation between the level of job demands and the control the individual is experiencing and the individual's job satisfaction and mental health. These researchers found correlations between high job demands combined with low job control and its influence on the development of job strain or psychosomatic health problems. Two hypotheses are associated with the DC model. The strain hypothesis states that a "combination of high demands and low decision latitude leads to job strain" (De Jonge et

al., 2010, p. 125). The second hypothesis associated with this model is the active learning hypothesis, which forecasts, “a combination of both high demands and high decision latitude will increase work motivation, learning, and personal growth” (De Jonge et al., 2010, p. 126). Use of this model is appropriate for this study, as it included an analysis of predictor variables that can be associated with job demands and control for their influence on the development of CF, a psychological stress disorder.

The study by Lourel et al. (2008) tested the Karasek’s DC model and psychological impact or burnout on firefighters, using volunteer firefighters as the sample population. The creation of this theoretical model was to generate explanations for job burnout, and Maslach’s Burnout Inventory (MBI) provided data in its application to the firefighting profession by Lourel et al. Hypotheses of the study outline associations between emotional exhaustion, depersonalization, job demands, personal accomplishment, and job control. Findings identified emotional exhaustion to have a positive association with job demands and a negative association with job control. Additionally, the researchers found job demands to be a predictor variable for depersonalization and emotional exhaustion. Implication of this research is to promote preventative actions of psychological suffering in firefighters and therefore, to protect their psychological well-being. The use of the DC model in this Lourel et al. study demonstrates its applicability to this research studying CF in firefighters.

However, some researchers have used revised versions of the original model in order to strengthen perceived weaknesses. One such example is the integration of the conservation of resources theory into the original model to create the demand-control-

person model, as the DC model may only be effective on individuals with high emotional stability (Rubino et al., 2012). In another study, researchers recognized the job demands-control model as a verified model for work stress while also recognizing the influence of work conditions comprised of high demands and low autonomy on strain caused by work (Gyorkos et al., 2012). However, Gyorkos et al.'s (2012) research also recognized that the model does not apply consistently to all cultures and individuals resulting in the incorporation of the additional influence of personality on applying the model in the study. As this present study involves the variable of personality, this incorporation by Gyorkos et al. informs the use of this model in this study.

Compassion Fatigue

As defined by Hofmann (2009), CF is the phenomenon present when an individual loses his or her normal ability to feel and express sincere understanding, empathy, and support. Additionally, the notion of CF as described by Phelps, Lloyd, Creamer, and Forbes (2009) is reliant on the demands assigned to the responders or caregivers and develops because of exposure to distressed individuals, existing desires to help, and overwhelming empathy. Some researchers, however, use several terms interchangeably to refer to the phenomenon of CF while others provide clear distinctions amongst them. VT, STS, and CF are terms used by some researchers to refer to the psychological distress experienced as an occupational hazard of working with traumatized patients (Bride et al., 2007; Craig & Sprang, 2010; Prati et al., 2010).

However, others feel it is important to differentiate CF from other similar concepts such as countertransference (Berzoff & Kita, 2010) or burnout (Cicognani et al.,

2009). The commonality of these terms is their use as descriptors for the impact of secondary traumatization; however, these terms may differ in their phenomenology (Meadors, Lamson, Swanson, White, & Sira, 2009). In an effort to establish an differentiation amongst these terms that are often used interchangeably, Craig and Sprang (2010) provided a simplification defining vicarious trauma as “changes in cognitive schemata” and STS and CF as “socioemotional symptoms” (p. 320). Symptoms can exist in the physical, cognitive, and behavioral domains such as aches and pains, poor decision-making, and social withdrawal (Phelps et al., 2009).

In 1995, Figley developed the first instrument designed specifically for measuring CF, thus inspiring further developed revisions in years following (Bride et al., 2007). This original instrument included a CF subscale with scoring that categorized results in one of five risk levels and a burnout subscale with four risk levels (Bride et al., 2007). A revision of this original instrument, renamed the ProQOL and developed by Stamm in 2005, is comprised of CF, compassion satisfaction, and burnout subscales designed as a 30-item self-report questionnaire (Sprang, Clark, & Whitt-Woosley, 2007). This measurement instrument often used in current research categorizes individuals with low compassion satisfaction scores (below 40) and high burnout scores (above 57) as having CF (Bhutani, Bhutani, Balhara, & Kalra, 2012).

CF is defined in current research as the reactions that develop from overexposure to patient suffering (Berzoff & Kita, 2010), a more comprehensible term for describing STS (Bride et al., 2007), and the “cognitive-emotional-behavioral changes” that the provider experiences as a result of their exposure to trauma survivors (Craig & Sprang,

2010, p. 320). Secondary traumatic stress disorder is the natural and consequential behaviors and feelings that occur due to awareness of a traumatic event experienced by a significant other or the desire to help others affected by trauma (Bride et al., 2007; Craig & Sprang, 2010). The needs of firefighters and emergency response professionals have changed potentially due to the changes in their firefighting profession. In one study, researchers found the supportiveness existing in the work environment, degree of involvement in recovery operations, and years on the job were all predictive factors for CF (Phelps et al., 2009).

Cacciatore et al. (2011) presented an innovative program inspired by the growing needs of trained first responders as a result of CF development that led to the incorporation of crisis response teams (CRTs) operating within the fire departments. However, their work in these organizations has led to the expansion of services to the victims these professionals were serving, therefore generating two-fold benefits: the firefighters and the community members they serve (Cacciatore et al., 2011). The Cacciatore et al. case studies of the use of CRTs in municipal fire departments in Arizona were used to illustrate how a program initiated to serve the post incident needs of firefighters developed to offer multifaceted benefits to not only the firefighters but also to help them more definitively assist their victims. The value of this article in relation to this research was in its recognition and evaluation of the formation of negative effects such as CF and its symptoms. Additionally, discussion involved ways of relieving compassion fatigue in preemptive ways. CRTs in fire departments as presented in this article occurred using the principles of crisis intervention and trauma theory (Cacciatore et al., 2011).

Vicarious Traumatization

VT, the first term developed and sometimes currently used interchangeably with CF, is a term used to identify this phenomenon of transformation resulting from work with traumatic events and traumatized patients (Craig & Sprang, 2010). Definitions of VT found in existing research include the change of cognitive representations and belief system occurring from empathic connections with victims of traumatic events (Bride et al., 2007; Craig & Sprang, 2010) as well as the stress from providing care to individuals who are suffering or have experienced a traumatic event (Argentero & Setti, 2011).

In a key study by Argentero and Setti (2011), focus was on the occupational stress experienced by helping professionals who assist others in times of critical emergency needs. These authors explore engagement and VT by applying the Maslach Burnout Inventory-General Scale and the Secondary Traumatic Stress Scale. Data collected on self-completed questionnaires of 782 emergency workers in Italy supported previous studies and determined correlations between the VT and engagement symptoms and factors such as job support, social support, and role clarity. Argentero and Setti's research informs this study as it strengthens evidence of the psychological risks of work as an emergency responder.

Argentero and Setti (2011) sought to examine the incidence of VT symptoms, predictor variables of developing these psychological risks, and factors in the individual and organization that improve the worker's state of well-being. The participant pool of emergency workers used by Argentero and Setti included more than just ambulance personnel by including firefighters, police officers, civil protection corps, hospital

emergency room staff, and military increasing the generalizability of the results. The study's implications were to identify high-risk professional categories that could allow for the generation of preventative measures. Results confirmed earlier studies indicating the strong role organizational factors play in the development of VT and engagement (Argentero & Setti, 2011).

Furthermore, Argentero and Setti's (2011) included evaluations of descriptive variables such as gender, marital status, and job seniority as showing correlation with the other outcome elements produced a deeper understanding of which individuals are most at risk. As their study built upon and strengthened results from previous studies, it also provides opportunity for even more detailed exploration of the groups deemed at highest risk. However, a significant limitation of Argentero and Setti's study is the inability to generalize results to countries other than Italy as the response to variables are influenced by the culture of this nation and may not replicate in other cultures.

Countertransference

Additionally, CF has shared characteristics with countertransference (Berzoff & Kita, 2010) but these are each different phenomenon. Countertransference and CF are differentiated based on the concept that CF is the therapist or professional's absorption of the emotional distress of the patients traumatic experience whereas, countertransference is the therapist or professional's negative response to the suffering the patient is experiencing (Berzoff & Kita, 2010). This alludes to the differentiation in the traumatization process and source of symptoms. First responders such as firefighters and EMS personnel have direct contact with traumatic events, which is associated with

primary traumatization whereas secondary traumatization occurs because of indirect exposure (Meadors et al., 2009).

Berzoff and Kita (2010) sought to define CF and countertransference challenging their use as interchangeable terms although these authors also include the counter perspective of the interception of these two terms. Detailed explanation as to the independent definitions of these two phenomena was the basis of Berzoff and Kita's article. Presenting definitions of CF and countertransference provided the foundation for the authors' position on the different sources and function for each as well as the differing interventions. The authors expressed that CF occurs as a response to the collective experience of helping people who are suffering and those who continue to suffer despite efforts to alleviate it. However, compassion associated with this type of work does not always result in fatigue but rather sometimes can be the driving force behind desires to continue such work.

Burnout

The symptoms associated with CF compromise an emergency responder's patient care and left untreated can progress to burnout (Gallagher, 2013). Burnout differentiates from CF as it presents as overpowering exhaustion, negative feelings and separation from job, and feelings of ineffectiveness resulting from long-term, extensive exposure to job stress (Cicognani et al., 2009; Papovic, 2009) while CF occurs as an acute response to traumatic work related events (Cicognani et al., 2009). Harr's (2013) study identified burnout as a multidimensional phenomenon comprised of exhaustion, cynicism, and inefficacy. However, some researchers listed job burnout along with secondary trauma as

a component of CF (Adams, Boscarino, & Figley, 2006; Bhutani et al., 2012). The studies that focused on defining the phenomena CF and burnout advised the need to have a solid operational definition of the phenomenon in this study.

Papovic (2009) presented a case study for further understanding professional burnout syndrome. Incorporated Papovic's study, descriptive identifications of helping professions and helpers establish understanding of the components of who burnout impacts. Helping professions are those such as health care workers, police officers, firefighters, psychologists, and social workers (Papovic, 2009). These individuals experience stressful working conditions as they have direct contact with suffering individuals. Daily encounters of this type cause harm to the psychological well-being of the helping professional (Papovic, 2009).

In the 2009 study, the researcher placed focus on the identification of the Burnout Scale as an instrument for use in the wider application of prevention among the helping profession population (Papovic). As such, Papovic's focus on prevention informed this study, as intent was to find correlations with predictor variables in order to allow implementation of proactive measures. Additionally, Papovic emphasized recognition for the lack of awareness of vulnerability to burnout by helping professionals as many of these professionals may feel a sense of immunity. A limitation of this article was the shortage of supporting research cited by the authors in regards to the concepts and components presented.

Compassion Satisfaction

Compassion satisfaction is the positive component of quality of life paradigm. Quality of life of rescue workers incorporates both the negative dimensions of CF and burnout and the positive dimension of compassion satisfaction (Prati et al., 2010). The positive feelings and pleasure an emergency responder draws from their successful work helping others is compassion satisfaction (Bhutani et al., 2012; Harr, 2013). Compassion satisfaction is an opposing force in relation to CF as low compassion satisfaction is a potential critical element in one's development of CF while high levels offers protection against negative stress outcomes of CF and burnout (Meadors et al., 2009; Van Hook & Rothenberg, 2009).

Mediating Factors

Cicognani et al. (2009) presented a quantitative study in which they operationalized rescue workers' quality of life using the three indicators of CF, burnout, and compassion satisfaction. Included in the Cicognani et al. article were prior studies of researchers who recognized the potential negative effects of emergency response work and these authors' recognition of existent coping mechanisms in addition to recognizing the roles of various levels of protective factors. Recognizing and defining CF and burnout as possible negative outcomes, the environmental conditions of the profession act as a source for traumatic exposures (Cicognani et al., 2009). In response to this recognition, Cicognani et al. investigated the relationships between quality of life and psychosocial variables of coping strategies, self-efficacy, collective efficacy, and sense of community in emergency response workers. Collected data showed active coping and self-efficacy as

positively correlated to quality of life; whereas, distraction and self-criticism correlated to negative outcomes and collective efficacy along with sense of community showed slight correlation with positive outcomes (Cicognani et al., 2009).

Furthermore, researchers identified that inferences existed based upon epidemiological evidence that those individuals involved in the initial responses and treatment of those impacted by trauma are at high risk for the development of CF (Craig & Sprang, 2010). Additionally, a significant amount of research has been conducted examining mediating or buffering factors in the development of CF (Cicognani et al., 2009; Prati et al., 2010; Prati et al., 2011; Tuckey & Hayward, 2011). Efficacy, self and collective, have been found to act as mediating factors that can contribute to a positive quality of life for emergency responders (Cicognani et al., 2009; Prati et al., 2010; Prati et al., 2011). Additionally, a previous study noted the professionals experience and competency as factors that decrease the impact of CF (Harr, 2013).

Self-efficacy is part of the self-appraisal that occurs in response to a stressful event as the individual evaluates the perception he or she holds of his or her coping abilities (Prati et al., 2010). In regards to an emergency worker's quality of life, researchers found self-efficacy to be an instrumental part as the workers' perception of competencies and skills reduces distress and the occurrence of negative traumatic stress outcomes (Cicognani et al., 2009). However, the work environment of regular exposure to crises and trauma of various types and high emotional demands can deplete energy fueling coping abilities (Tuckey & Hayward, 2011) and thus hindering self-efficacy.

Prati et al. (2010) used stress and coping theory to emphasize interactions in determining coping responses to stressful events, and used social cognitive theory to focus on stress reactions depending on one's self-appraisal of coping capabilities. Purpose of this research was to investigate the role self-efficacy plays in moderating stress appraisal and professional quality of life. In Prati et al.'s study, a population of Italian rescue workers completed self-administered questionnaires including the ProQOL Scale to measure CF, burnout, and compassion satisfaction. The researcher's use of multiple regression analysis found a correlation between stress appraisal and professional quality of life in rescue workers with low levels of self-efficacy (Prati et al., 2010). However, a limitation may lie in the population used as cultural influences may prevent generalization to other nations and cultural populations. Nevertheless, the sample population in Prati et al.'s study did include diversity in regards to gender, age, years of service, and specific rescue work profession, which can improve external validity.

The work environment for emergency workers such as firefighters requires collaborative efforts and strong levels of collective efficacy to accomplish tasks (Prati et al., 2011). Collective efficacy refers to how the individuals view the capabilities, efforts, and skills of the group as it pertains to the group's actions when handling critical situations (Prati et al., 2011). As explained by Tuckey and Hayward (2011), a method of providing protection against the emotional demands of emergency response work is to foster a strong psychosocial work environment to help responders meet the ever-present demands.

Personality

Previous researchers' findings showed support for personality as a contributor to coping abilities. As shown by multiple researchers, an individual's affective personality type can influence vulnerability to stress effects (Arnten et al., 2008; Bood et al., 2004). Four types of affective personalities (self-destructive, low affective, high affective, and self-actualization) created based on varying combinations of positive and negative affect levels have been examined as to their influence on response to stress (Bood et al., 2004) as some individuals appear more vulnerable to stress effects (Arnten et al., 2008). High positive affect (PA) levels reported by individuals coincided with reports of increased ability to express organizational assertiveness along with high levels of life satisfaction and quality of life (Arnten et al., 2008). However, negative affect (NA) reported at high levels correlated with stress symptoms and increased strain over situations perceived as beyond their control (Arnten et al., 2008). Furthermore, individuals found to have personalities low in conscientiousness or high in NA had a higher probability of exhibiting poorly adjusted coping strategies and ineffective work practices (Gyorkos et al., 2012).

Possibilities for a link between an emergency responder's resilience to the development of CF or burnout and personality type exist. Personality traits such as extroversion, internal sense of control, flexibility in thought processing, sense of humor, and ability to regulate affect were associated with psychological resilience in a previous study (Phelps et al., 2009). Extroversion, a Big Five personality factor, is associated with problem-solving, coping strategies, optimistic perspectives, and being personally

interactive including support seeking (Bakker et al., 2006). The big five model is one of the predominant personality models and describes personality in terms of neuroticism, extraversion, conscientiousness, agreeableness, and openness to experience (Hochwalder, 2009). While Bakker et al. (2006) studied all of the Big Five personality factors for a relationship to burnout, the emotional stability or neuroticism factor has a greater frequency of established relationship to burnout by researchers than the other four factors. The strong correlation between negative health outcomes and the Type D personality further supported this, as it is comprised of the two traits negative affectivity and social inhibition that overlap neuroticism and extroversion (Howard & Hughes, 2012).

The development of the Big Five personality dimensions emerged out of desire to create a common categorization or language amongst personality researchers (John, Naumann & Soto, 2008). Personality psychology researchers used a variety of scales that studied specific attributes in different ways making it difficult to connect similarities between scales. Through decades of research by various researchers, a derived consensus of a general taxonomy of personality traits that encompasses the thousands of specific attributes into five general dimensions developed (John et al., 2008). The BFI functions as an integrative tool by providing a common language in the personality research environment of natural terms used by individuals to describe themselves and others (John et al., 2008).

Summary

In this chapter, I provided a review of existing literature and research pertaining to the components and concepts of this study. Exploration of the literature provided understanding of terminology associated with and used interchangeably with CF in addition to the relationship between the study variables. Having an understanding of VT, STS, burnout, and CF as individual phenomena is an important component to understanding the development and existence of CF in firefighters. Previous research has established the operational and conceptual definitions of each providing the necessary foundational knowledge and established associations necessary for this research.

Additionally, certain variables have connections to stress response in emergency responders and other health care workers. Existing research has demonstrated the impact personality traits, efficacy, and job stressors have on the psychological well-being of those providing care and interventions. Reviewing the existing findings revealed gaps in the exploration of these connections. An underrepresentation of firefighters as a population in research examining stress responses and psychological well-being existed along with a lack of differentiating between stress responses correlated with EMS license levels. This review of existing literature provided foundation and guidance to the research methodology expanded upon in the next chapter.

Chapter 3: Research Method

Introduction

The purpose of this study was to identify the predictability of CF in firefighters based upon the variables of personality type, years of service, and EMS license level. In this chapter, I will explain the research design, target population, sampling procedure, data collection and analysis procedures, and existent internal and external validity issues.

Research Design

The research was a quantitative study focused on examining variables of personality type, EMS license level, and years of service for their predictive qualities in relation to the development of CF in firefighters. A cross-sectional design with a survey method for data collection was determined to be the best fit for the study. The use of cross-sectional designs is common in the field of social sciences to determine prevalence and predictive value; researchers typically use surveys with this design to ask for a random sample of responses pertaining to experiences, backgrounds, or attitudes (Mann, 2003). However, as with any research design, there are strengths and limitations that exist. Identified limitations need attention in order to protect the validity of the study.

Threats that exist for all designs are history, maturation, regression, selection, mortality, and diffusion of treatment (Hudson, Pope, & Glynn, 2005). The cross-sectional design encompassed strengths in addressing some of these threats. A strength of a cross-sectional design is that all testing occurs during the same period, thereby avoiding threats caused by shifts in the nature of the measuring instrument (Campbell & Stanley, 1963). The cross-sectional design for this research involved a period in which all data inquiry

occurred and did not involve a pretest posttest situation. Resulting from design strengths, I was able to eliminate both the history threat that occurs due to passing time and the influence outcomes along with the maturation threat that occurs from participants changing during the period of experimentation (Hudson et al., 2005). Additionally, the elimination of the threat of mortality existed as continued participation over time would not be necessary and would only exist to the extent that identified participants choose not to complete the survey questionnaires.

Threats to address in regards to this design are regression, selection, and diffusion of treatment. Regression involves the inclusion of participants displaying characteristics representing the extreme at time of selection and which are likely to change toward the mean during the experiment (Laerd Dissertation, 2012). Purposive random selection can eliminate this threat by selecting whole fire departments that meet the necessary criteria, therefore avoiding bias that may influence the selection of certain individuals. Addressing the selection threat also occurs with this careful sampling process. Finally, the diffusion of treatment threat, if not addressed, can influence results. This threat involves the influence participants have on each other and the responses they provide through their communications during the experiment (Laerd Dissertation, 2012). Disbursing the survey questionnaires to the entire participating fire department's personnel at the same time can help minimize the allowable time for conversations that may influence how participants interpret and respond to the questionnaire.

Methodology

Population

The target population for the research was career firefighters who were also licensed EMS providers and employed at fire departments that provide advanced life support as part of their emergency response services. The desired sample size to survey was 300 firefighters in anticipation of low return rates of the questionnaires, which exceeded the actual sample size needed for the calculated data sample.

Sampling Strategy

Several sampling strategies exist including nonprobability sampling designs such as convenience, purposive, and quota samples and probability sampling designs including simple random, systematic, stratified, and cluster samples (Latham, 2015). In choosing a sampling strategy for a study, it is helpful to identify those that are poor fits for the study. Gaining knowledge about the various sampling designs is necessary for developing the appropriate strategy description (Rudestam & Newton, 2007). In initial consideration, a purposive sample design seemed a proper fit for the study as the desire is to study a specific population that meet certain criteria. However, nonprobability sampling lacks the ability to ensure that each unit could be included in the sample (Latham, 2015), detracting from the desired purpose of the study.

In considering the probability sampling designs, I evaluated the fit of each with the research questions and variables. In this study, I evaluated the predictability of CF in firefighters based on the factors of personality type, EMS license level, and years of service. The sampling frame was comprised of fire departments with an integrated EMS

service, fire departments that are the emergency medical services provider for their response area. As such, a simple random sample design would have proved extremely cumbersome to list each individual firefighter, the sampling unit, in order to draw a random sample. If the sampling unit had been the fire department organization, then this strategy could have been a very viable option. Tuckey and Hayward (2011) used this strategic approach as they sent invitations for participation out to a random sample of fire departments and then sent questionnaires to the individuals in fire departments opting to participate. Prati et al. (2011) and Cicognani et al.(2009) employed a similar approach as a questionnaire was posted on a website, and then information about the study was sent in email form to various fire departments asking them to share the information with their personnel for participation. Similarly, systematic sampling was rejected even though it simplifies the random sampling process by using the process of selecting the K th (N/n) sampling unit on the list after the first randomly selected unit has been determined (Trochim, 2006).

Vashdi et al. (2012) used stratified sampling, another appealing option, in order to generate a stratified random sample of the firefighters who responded to the World Trade Center disaster. This method provides increased accuracy through the focus on ensuring that the diversity of the population is appropriately represented (Trochim, 2006). In other words, this design highlights the importance of representing population groups in such a way that replication of the ratio of composition in the population occurs in the sample. Considering this study, the strengths of this strategy were not of key pertinence to the study's design.

Therefore, I used a probability sample design known as cluster sampling. The concepts employed in the sampling strategy of the previously mentioned studies informed the sampling strategy for the present study. Studies that identified potential fire departments then disbursed questionnaires to members of selected fire departments (Cicognani et al., 2009; Prati et al., 2011; Tuckey & Hayward, 2011) supports using a two level cluster sampling strategy as a good fit. In cluster sampling, a selection of larger groupings called clusters occurs: then the selection of sampling units occurs from these groupings (Trochim, 2006). Generating clusters of fire departments that employ full time firefighters licensed also as basic EMTs or paramedics and provide emergency medical services to the community was the first level. Selecting whole fire departments from the list to include in the study was the second level. All firefighters at the selected fire departments received surveys and had the opportunity to participate in the study.

Sample Size Calculation

When calculating a sample size needed to achieve desired power, use of resources such as GPower 3.1 is beneficial. However, even with the assistance of the program, knowing certain values is necessary for input. In consideration of necessary calculations, knowing any three of the four components of sample size, effect size, alpha level, and power allows the fourth to be calculated (Trochim, 2006). As the desire was to calculate a sample size, it was necessary to know the desired effect size, alpha level, power, and degrees of freedom derived from the number of independent variables.

Field (2013) defined effect size as an objective, uniform measure of the extent of the detected effect. Prior to conducting the study, the actual effect size was unknown,

making it necessary to determine a reasonable estimation using existing research. Another alternative would be to use the conventions displayed on GPower when the effect size input field is highlighted (.10 small, .30 medium, .50 large). Further explaining these standard values, a small effect explains only 1% of the total variance, a medium effect explains 9%, and a large effect explains 25% (Field, 2013). Existing research helps in determining anticipated effect size by looking at the effect sizes achieved in the study. For instance, in one study involving CF and its predictability based on the independent variables, 10% of the variance or a medium effect was determined (Craig & Sprang, 2010). However, more than one study would need to be used as a predictor and several should be reviewed to provide the best guidance.

The alpha level, also referred to as the significance level, is “the salience of the treatment relative to the noise in measurement” (Trochim, 2006, para. 3). This variable is much easier to determine as a desired value as common values exist. Type I errors are those made when an effect is believed to exist in a population when it actually does not exist; alpha levels indicate the probability to making this type of error with .05 being the most common value used (Field, 2013). However, even if a .05 alpha or significance level in the study was entered as input, a post hoc analysis may reveal a significance level of .001 was actually achieved especially with the use of a larger sample population.

Finally, the power level indicates a test’s ability to detect an effect occurring in the study at a particular odd (Trochim, 2006) with .80 being a good value to strive to achieve (Field, 2013). Again, as a desired level, this common value may be used as input in order to allow for sample size calculations to occur, but a higher power level may be

determined to have been attained in post hoc analysis. In using these inputs as discussed above and GPower 3.1 to run a chi-square test, the values of effect size = .30, alpha level = .05, power = .80, and $df=3$ (based on variables in my study) were entered to calculate a total sample size of 122. In the event the desired number of respondents had not been achieved using the six fire departments comprising the Greater Lansing Metropolitan area, the sample pool would have been extended to include other fire departments in lower Michigan that met the minimum criteria for study participation.

Recruitment, Participation, and Data Collection Procedures

Fire departments of various organizational structures exist: career fire departments, volunteer fire departments, and combination departments. Additionally, fire departments categorization occurs based on the parameter of being strictly a fire response organization or one that encompasses EMS response. The recruitment for this research was restricted to fire departments with all or some career firefighters also licensed and involved in EMS response as a function of their organizational role. Pertaining to the individual participants at the contributing fire departments, data collection regarding the demographics of years of service as a career firefighter and EMS license level occurred.

Survey and Internet Research Methods

Surveys conducted as questionnaires require consideration of the advantages and disadvantages as this approach is the most appropriate for data collection (Frankfort-Nachmias & Nachmias, 2008). Various mediums are available for the distribution and execution of the assessment instrumentations chosen for this study. The internet was one

of these mediums that received consideration. Another medium was the group administered questionnaire approach.

The use of questionnaire surveys and the internet as a delivery medium was suitable for this research. The anonymity provided by filling out a survey rather than a face-to-face interview may elicit more honest answers from a population concerned with appearing weak to coworkers (Papovic, 2009). Additionally, use of instrumentation such as the ProQOL and personality assessment instruments, which are in questionnaire form, allow for the conduction of data collection using an online format. The remaining predictor variables are merely demographic information filled out by the individual taking the assessment surveys. Use of the internet survey mediums such as Survey Monkey allowed for expedient and low cost disbursement to firefighters at fire departments across small or large demographic areas. This allowed for easy access to entire fire departments without having to obtain personnel lists and home mailing addresses.

As the use of the internet has rapidly grown, advantages for researchers have been acknowledged: less expensive than traditional paper-and-pencil form, increased participant pool and enhanced external validity, improved access for sensitive issues and to various groups, reduced time, methodological control by the researcher, and improved precision and efficiency of data entry and analysis (Campbell Rinker, 2015). However, due diligence would need to be demonstrated by the researcher in order to receive responses of adequate quantity and quality. With mail and internet delivery methods, it

can be difficult to verify that the author of the response was the intended participant (Campbell Rinker, 2015).

Group administered questionnaires could provide a solution but also its own drawbacks. Data collection using this method can greatly increase the return rate as a distribution of questionnaires to gathered groups provides the opportunity for an immediate completion of the surveys and clarification of questions asked (The Writing Studio, 2015). While this may seem a wholly beneficial method for data collection, it does provide the challenge of accessing opportunities for execution. Additionally, if the sample population extends beyond the immediate geographical area, then travel would be involved, which can be costly and time intensive.

For this research, I determined the group-administered method coupled with internet delivery to provide the greatest benefit of high return rate in addition to a single geographical area capable of supplying the target population. Conducting group-administered questionnaires with local fire departments provided for accessibility to the target population and an increased return rate of surveys. Expanding the participant pool to include other geographic areas through internet delivery can increase external validity and generalizability, however focusing on fire departments all operating under the direction of the same medical control authority allows for the consistency of the work environment across the organizations.

Instrumentation and Operationalization of Concepts

For this study, I used two instruments to collect data to evaluate the predictive nature of personality types, EMS license level, and years of service on the development

of CF in firefighters. The BFI (John, Donahue, & Kentle, 1991) provided data identifying participating firefighter' personality types and the ProQOL Scale (Stamm, 2012) provided data evaluating CF levels based on the elements of compassion satisfaction, burnout, and STS. Permissions from the instrument authors allowed for the use of these instruments providing for the use in this research. The two remaining independent variables of EMS license level and years of services were gathered as demographic information completed by survey respondents and do not require a measurement instrument.

Big Five Inventory (BFI). The BFI (John et al., 1991) is an instrument comprised of 44 items that participants score based upon the level of agreement for applicability to self. For obtaining data on one of the independent variables, this instrument measured the interval scaled personality type variable. The scoring applied to each item was a five point Likert scale with 1 for *Disagree Strongly*, 2 for *Disagree a little*, 3 for *Neither agree nor disagree*, 4 for *Agree a little*, and 5 for *Agree strongly*. The five factors receiving consensus in personality descriptions are the constructs of the BFI: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness (John et al., 2008). Use of this instrument was in multiple studies globally relating personality factors to burnout (Bakker et al., 2006; Morgan & de Bruin, 2010) including a study of urban firefighters (Oliveira, 2011). The NEO-PI-R is a 240-item comprehensive assessment of the Big Five and their facets with which the BFI showed good convergence and internal reliability (mean $\alpha=0.83$) and the mean test-retest reliability of the BFI across three time points was 0.76 (Woods & Hampson, 2005). In another study focused on examining the

validity of the BFI, it found Cronbach's alpha for each construct was E=.66, N=.59, O=.74, A=.70 and C=.87 while also conducting an exploratory investigation to verify psychometric properties of the measurement model finding E=.90, N=.89, O=.93, A=.90 and C=.87 indicating adequate construct validity and convergent validity (Kamarulzaman & Nordin, 2012).

The Professional Quality of Life Scale 5 (ProQOL). Originally titled the Compassion Fatigue Self Test (CFST) as developed by Figley in the late 1980s, subsequent collaborative work revising the CFST with Stamm resulted in the 1995 release of the current version titled the ProQOL (Stamm, 2010). Measuring the interval scaled dependent variable of CF, the ProQOL is a 30-item questionnaire asking respondents positive and negative questions about their experiences as a [helper] using a Likert scale 1-*never*, 2-*rarely*, 3-*sometimes*, 4-*often*, 5-*very often* to score the frequency they experience each item. This instrument had become the most common instrument used to investigate the positive and negative effects of work with trauma victims as seen in the numerous studies of various helping professional populations including firefighters (Chen et al., 2007; Craig & Sprang, 2010; & Van Hook & Rothenberg, 2009). As identified by the instrument author, good construct validity exists in over 200 published papers (Stamm, 2010). A study by Sprang et al. (2007) reported alpha scores for the constructs of this instrument ranged from .72 for burnout to .80 for compassion fatigue and .87 for compassion satisfaction supporting the instrument as demonstrating internal consistency and construct validity. The ProQOL's composition of three subscales to include the positive construct of compassion satisfaction in addition to the two negative

constructs of burnout and compassion fatigue/secondary traumatic stress and its use across various populations of helping professionals supported its selection for this study. Some of the notable study population's include clinicians of various disciplines (Bhutani et al., 2012), emergency workers (Cicognani et al., 2009), rescue workers (Prati et al., 2010), and firefighters in Kaohsiung, Taiwan (Chen et al., 2007).

Data Analysis Plan

In this study, I analyzed the self-reported data from the ProQOL and BFI by conducting a logistic regression analysis using IBM SPSS Statistics 21 software. Binary logistical regression is a type of multiple regression used to predict membership in one of two categorical outcomes (Field, 2013). The dependent variable, CF, was dichotomous by scores indicating "high" level of STS or CF coded as "1" and scores not indicating a high level of CF coded as "0". In the study, I explored the validity of the research question: What is the predictive nature of personality type, years of service, and EMS license level on the development of compassion fatigue in firefighters?

Logistic regression is used to analyze an independent variables' ability to predict the dependent variable's probability to have the value of 1 (StatsProf, 2013). Hence, I explored the predictability of the independent variables of personality type, EMS license level, and years of service on the likelihood of the dependent variable increasing or decreasing. A supporting factor for the use of logistic regression was the odd ratio. The odd ratio, exponential beta, provides an indicator of the dependent variable's probability to increase or decrease based on influence of the independent variables (Statistics Solutions, 2014). In this study, I was exploring the predictability of compassion fatigue

developing in firefighters making the odds ratio a valuable measure. Analysis that revealed an odds ratio greater than one indicates increased probability of compassion fatigue developing while an odds ratio less than one indicated a decreased probability (Statistics Solutions, 2014).

Logistic regression analysis also allowed for classification and error reduction. Output from logistic regression generated classification tables that identified the percent of cases predicted correctly from the categories (Appricon, 2010). The classification tables were a primary tool for conducting model performance analysis in logistic regression (Appricon, 2010). Additionally, logistic regression reduced the errors in classifying. More specifically, logistic regression does not need a specific relationship between variables or metric scaling of independent variables for analysis (Statistics Solutions, 2014). The independent variable of EMS license level was nominal scaled unlike the other variables, which were interval scaled. Linear models would have required all independent variables to be interval or ratio scaled (Statistics Solutions, 2014).

Ethical Procedures

The researcher completed a *Request to the Institutional Review Board [IRB] for Approval to Conduct Research* form for submission, approval, and attachment to this study and obtained IRB approval number 10-23-15-0337033. For participation, the associated fire chiefs provided permission for their fire department personnel to be included in the study. Additionally, all participants received and signed consent forms

that explain the purpose of the study prior to participation in data collection. All required approvals and permissions occurred prior to commencement of data collection.

Protection of participants' rights ensued with the consent form included in the materials packet disseminated by the researcher through email attachments in the internet setting. Participants were aware that participation was inclusive of all personnel reducing anonymity of participants. However, responses provided on surveys were anonymous due to lack of identifying information on forms protecting the individual's rights and risk of adverse outcome based on responses provided.

Additional protection existed for the participants who completed survey in online setting with the ability to submit responses anonymously through the Survey Monkey portal. Only the researcher had access to the locked boxes for the group-administered setting and online survey repository. Upon completion of data collection, the researcher is maintaining security of data and associated reports in a locked home safe for a period of five years.

Summary

My purpose of this study was to examine the predictive nature of personality type, EMS license level, and years of service on the development of CF in firefighters. In this chapter, I described the quantitative cross-sectional design with survey method for data collection including the study setting, the sample population, and the sampling strategy. Additionally, I included explanation of the usefulness and the validity and reliability of the BFI measurement instrument for assessing personality type and the ProQOL measurement instrument for assessing CF. Finally, discussion encompassed ethical

considerations associated with data collection and analysis including relevance to IRB procedures associated with protecting participant's rights and diminishing participant risk. In Chapter 4, I have presented the findings of the study.

Chapter 4: Results

Introduction

The purpose of this study was to assess the predictive qualities of EMS License level, years of service, and personality type on the development of CF in firefighters. In this chapter, I discuss the findings of the data analysis. The research question asked, “What is the predictive nature of personality type, years of service, and EMS license level on the development of compassion fatigue in firefighters?” The ProQOL Scale and BFI were the measurement instruments I used to collect the data pertinent to answering this question.

Research Tools

The ProQOL measured the dependent variable of CF. For the purpose of this study, the two subscales that represent the components of CF determined the participant’s outcome code. The scoring parameters for the ProQOL indicate that a raw score on each subscale that equals 43 or less is a low level, a score around 50 is average level, and a score of 57 or more is a high level of component measured by that subscale (Stamm, 2010). After conversion of raw scores to *t*-scores, a *t*-score of 56 or higher on the Burnout subscale or STS subscale ($n=45$) categorized the participant as high risk for the development of CF. Individuals who had *t*-scores below 56 on both of the CF components ($n=84$) were coded as not high risk for the development of CF. I did not use the Compassion Satisfaction subscale in this study.

The BFI was a 44-question instrument comprised of five scales: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness (John et al., 1991; John et

al., 2008). As designed by the instrument authors, scoring for each question used a 5-point Likert scale: averaging of each scale's associated individual question scores provided scores for each of the five personality trait scales. The eight questions comprising the Extraversion scale ($SD = .694$) yielded a mean score of 3.56. The nine questions comprising the Agreeableness scale ($SD = .609$) yielded a mean score of 3.99. The nine questions comprising the Conscientiousness scale ($SD = .568$) yielded a mean score of 4.07. The eight questions comprising the Neuroticism scale ($SD = .708$) yielded a mean score of 2.41. The 10 questions comprising the Openness scale ($SD = .530$) yielded a mean score of 3.56. The standard deviations and means for the personality type variable are presented in Table 1.

Table 1

Means and Standard Deviations of Variables

Variable	Mean	<i>SD</i>
BFI Extraversion scale score (bfie)	3.56	.694
BFI Agreeableness scale score (bfia)	3.99	.609
BFI Conscientiousness scale score (bfic)	4.07	.568
BFI Neuroticism scale score (bfin)	2.41	.708
BFI Openness scale score (bfio)	3.56	.530

Data Collection

The data collection plan included both online and group-administered survey methods. However, due to lack of available group-administration opportunities during the

data collection period, I only used the online method. Six fire departments received invitations to attend and an allotted 2-week review period to decide whether to allow organization participation. At close of the 2-week period, four fire department administrators returned signed Letters of Cooperation allowing their firefighters to receive invitations to participate. Participating fire departments' qualified personnel received emails containing invitation letters and Letters of Consent, which provided them with pertinent information for informed consent prior to participating in the study. Survey Monkey provided the online platform for survey completion for a period of 3 weeks. This yielded 129 submitted surveys.

Sample Characteristics

The study's population was comprised of fire suppression personnel who work regularly scheduled shifts each month and have assigned duties that involve emergency response. Each participant also had to have an EMS license as either a paramedic or basic EMT. The participant pool's range of experience spanned from new firefighters with less than 5 years on the job to firefighters with more than 20 years on the job. This population provided good representation of the larger population that comprises the firefighter profession.

In comparing the participant pool to the greater population, data from United States Fire Administration (USFA) and the Bureau of Labor Statistics (BLS) provided support of the sample's representation of the larger population. The USFA 2013 Census reported the fire service in Michigan to be comprised of 65.8% volunteer departments, 21.0% mostly volunteer departments, 3.8% mostly career department, and 9.3% career

departments, which compares to the national composition of 71.2% volunteer, 16.0% mostly volunteer, 4.5% mostly career, and 8.3% career (U S fire administration [USFA], 2015). The BLS uses the nation as the reference area when calculating Location Quotients (LQs) that compare area employment to the reference area; Michigan has a LQ of 0.64 and the Lansing/East Lansing area has a LQ of 0.86 (BLS, 2015), indicating the study's population is comparable to both the state and the nation.

Of the 129 survey respondents, 34 of the firefighters were EMTs and 95 were paramedics. Categorical representation in regards to years of service also demonstrates diversity amongst the participants as presented in Table 2. Although EMS license level and years of service did not prove to be statistically significant as predictors for the development of CF, they still provided valuable demographic information about the study's population.

The study's population was comprised of fire suppression personnel who work regularly scheduled shifts each month and have assigned duties that involve emergency response. Each participant also had to have an EMS license as either a paramedic or basic EMT. The participant pool's range of experience spanned from new firefighters with less than 5 years on the job to firefighters with more than 20 years on the job. This population provided good representation of the larger population that comprises the firefighter profession.

In comparing the participant pool to the greater population, data from United States Fire Administration (USFA) and the Bureau of Labor Statistics (BLS) provided support of the sample's representation of the larger population. The USFA 2013 Census

reported the fire service in Michigan to be comprised of 65.8% volunteer departments, 21.0% mostly volunteer departments, 3.8% mostly career department, and 9.3% career departments, which compares to the national composition of 71.2% volunteer, 16.0% mostly volunteer, 4.5% mostly career, and 8.3% career (U S fire administration [USFA], 2015). The BLS uses the nation as the reference area when calculating Location Quotients (LQs) that compare area employment to the reference area; Michigan has a LQ of 0.64 and the Lansing/East Lansing area has a LQ of 0.86 (BLS, 2015), indicating the study's population is comparable to both the state and the nation.

Of the 129 survey respondents, 34 of the firefighters were EMTs and 95 were paramedics. Categorical representation in regards to years of service also demonstrates diversity amongst the participants as presented in Table 2. Although EMS license level and years of service did not prove to be statistically significant as predictors for the development of CF, they still provided valuable demographic information about the study's population.

The study's population was comprised of fire suppression personnel who work regularly scheduled shifts each month and have assigned duties that involve emergency response. Each participant also had to have an EMS license as either a paramedic or basic EMT. The participant pool's range of experience spanned from new firefighters with less than 5 years on the job to firefighters with more than 20 years on the job. This population provided good representation of the larger population that comprises the firefighter profession.

In comparing the participant pool to the greater population, data from United States Fire Administration (USFA) and the Bureau of Labor Statistics (BLS) provided support of the sample's representation of the larger population. The USFA 2013 Census reported the fire service in Michigan to be comprised of 65.8% volunteer departments, 21.0% mostly volunteer departments, 3.8% mostly career department, and 9.3% career departments, which compares to the national composition of 71.2% volunteer, 16.0% mostly volunteer, 4.5% mostly career, and 8.3% career (U S fire administration [USFA], 2015). The BLS uses the nation as the reference area when calculating Location Quotients (LQs) that compare area employment to the reference area; Michigan has a LQ of 0.64 and the Lansing/East Lansing area has a LQ of 0.86 (BLS, 2015), indicating the study's population is comparable to both the state and the nation.

Of the 129 survey respondents, 34 of the firefighters were EMTs and 95 were paramedics. Categorical representation in regards to years of service also demonstrates diversity amongst the participants as presented in Table 2. Although EMS license level and years of service did not prove to be statistically significant as predictors for the development of CF, they still provided valuable demographic information about the study's population.

Table 2

Demographic Characteristics of Participants

Variable	<i>n</i>	Percent
EMS license		
EMT	34	26.4
Paramedic	95	73.6
Years of service		
0-Less than 5 years	17	13.2
5-Less than 10 years	30	23.3
10-Less than 15 years	32	24.8
15-Less than 20 years	28	21.7
20 or more years	22	17.1

Note. $n=129$.

Assumption Testing

The dependent variable in this study was dichotomous with individuals who scored high in either of the two CF components of the ProQOL scale coded as 1 and those who did not score high in either CF component coded as 0. This satisfies the first assumption of logistic regression analysis. Furthermore, the independent variables in this study are all categorical (EMS license and years of service) or continuous (personality) meeting the second assumption. Execution of a X^2 Test of Goodness of Fit, the Hosmer and Lemeshow Test indicated a $X^2 = 14.368$, $df = 8$, and $p = .073$ supporting the model as having good predictive capacity and rejection of the null hypothesis. An analysis of -2LL

chi-square was also conducted to examine the goodness of fit model of the independent variables and dependent variable. Nagelkerke pseudo *R* Square indicated a goodness of fit as the model accounted for 28.5% of the variance.

Results

In the research question for this study, I examined the extent EMS license level, years of service, and personality type could predict the likelihood of firefighters to develop a high risk of CF. Simultaneous entry of the independent variables as predictors into a logistic regression model addressed the development of high-risk levels for CF in firefighters. The neuroticism personality trait was the variable that predicted the development of a high risk level of CF in firefighters. More specifically holding all other independent variables constant, for a one unit increase in the neuroticism trait ($SD = .708$), the odds of developing a high risk level for CF are increased by approximately 230%. Overall, the model chi-square was found to be significant ($X^2 = 29.91$, $df = 10$, $p < .05$). See Table 3 for a summary of the logistic regression equation variables. In addition, a correlation matrix of the predictor variables is presented in Table 4.

Table 3

Logistic Regression: Predicting Compassion Fatigue

Logistic Regression Wald

Variables	Coefficient	Statistic	p	Exp(B) ¹
EMS license	-.124	.063	.801	.883
Years of service		2.894	.576	
Years of service(1)	-.068	.008	.928	.934
Years of service(2)	.461	.379	.538	1.585
Years of service(3)	-.595	.560	.454	.551
Years of service(4)	.218	.068	.795	1.243
bfie	-.152	.202	.653	.859
bfia	-.776	3.833	.050	.460
bfic	.084	.037	.848	1.088
bfid	1.194	9.153	.002	3.299
bfio	.646	1.995	.158	1.908

*Note.*¹ Factor by which the odds of developing high risk for compassion fatigue increase or decrease for a one-unit increase in the independent variable.

Chi-Square = 29.91; *df* = 10; *p* < .05

Table 4

Correlation Matrix of Variables

		EMSLicense	YearsOfService
EMSLicense	Pearson Correlation	1	-.176*
	Sig. (2-tailed)		.046
	<i>N</i>	129	129
YearsOfService	Pearson Correlation	-.176*	1
	Sig. (2-tailed)	.046	
	<i>N</i>	129	129
BFIE	Pearson Correlation	.036	.160
	Sig. (2-tailed)	.685	.069
	<i>N</i>	129	129
BFIA	Pearson Correlation	-.099	.121
	Sig. (2-tailed)	.266	.171
	<i>N</i>	129	129
BFIC	Pearson Correlation	-.021	-.016
	Sig. (2-tailed)	.817	.855
	<i>N</i>	129	129
BFIN	Pearson Correlation	.118	.051
	Sig. (2-tailed)	.183	.569
	<i>N</i>	129	129
BFIO	Pearson Correlation	-.028	.027
	Sig. (2-tailed)	.756	.762
	<i>N</i>	129	129

(table continues)

		BFIE	BFIA	BFIC	BFIN	BFIO
EMSLicense	Pearson Correlation	.036	-.099	-.021	.118	-.028
	Sig. (2-tailed)	.685	.266	.817	.183	.756
	<i>N</i>	129	129	129	129	129
YearsOfService	Pearson Correlation	.160	.121	-.016	.051	.027
	Sig. (2-tailed)	.069	.171	.855	.569	.762
	<i>N</i>	129	129	129	129	129
BFIE	Pearson Correlation	1	.103	.284**	-.281**	.274**
	Sig. (2-tailed)		.244	.001	.001	.002
	<i>N</i>	129	129	129	129	129
BFIA	Pearson Correlation	.103	1	.382**	-.391**	.154
	Sig. (2-tailed)	.244		.000	.000	.082
	<i>N</i>	129	129	129	129	129
BFIC	Pearson Correlation	.284**	.382**	1	-.413**	.351**
	Sig. (2-tailed)	.001	.000		.000	.000
	<i>N</i>	129	129	129	129	129
BFIN	Pearson Correlation	-.281**	-.391**	-.413**	1	-.097
	Sig. (2-tailed)	.001	.000	.000		.275
	<i>N</i>	129	129	129	129	129
BFIO	Pearson Correlation	.274**	.154	.351**	-.097	1
	Sig. (2-tailed)	.002	.082	.000	.275	
	<i>N</i>	129	129	129	129	129

Note. **Correlation is significant at the 0.001 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

A 2 x 2 classification table (see Table 5) illustrates the baseline prediction of developing CF and the prediction of developing CF after entering the logistic regression equation model. The baseline model predicted correct classification of approximately 65.1%. With the addition of the logistic regression equation, the model predicted correct classification of approximately 74.4%. Hence, the logistic regression equation increased prediction of correct classification by 9.3%. Furthermore, examination of a proportional reduction in error statistic further supported the classification table. More specifically, a

reduction in error of approximately 27% exists when predicting the development of CF in firefighters using the logistic regression analysis model compared to predicting the development of compassion fatigue in firefighters using the baseline, or null, model without the logistic regression equation.

Table 5

Classification Table: Predicting Compassion Fatigue

Observed	Not high risk	High risk	Percentage correct
Not high risk	74	10	88.1
High risk	23	22	48.9
Overall % Correct 74.4%			

Summary

The research question examined the predictive quality of EMS license level, years of service and personality type on the development of compassion fatigue amongst firefighters. The researcher is able to reject the null hypothesis due to the logistic regression model being statistically significant at $p < .05$. The alternative hypothesis stated a predictive relationship would exist. Personality type, specifically the neuroticism trait, had statistical significance in predicting the development of compassion fatigue in firefighters. Identifying the predictive quality of personality type can allow efforts for identifying current and future firefighters that need assistance in building a resiliency to the development of compassion fatigue.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to identify whether EMS license level, years of service, and personality type have predictive qualities in regards to the development of CF in firefighters. This negative stress response can hinder the impact on personal well-being and job performance by placing both the responder and those to whom they respond at risk (Smart et al., 2014). Identification of predictor variables can allow for the development of preventative measures and interventions to protect the psychological well-being of these emergency responders and prevent or lower the risk for development of CF.

Four fire departments participated in the study with 129 firefighters choosing to participate by returning a completed questionnaire. The questionnaire completed anonymously in an online platform incorporated demographic questions of EMS license level and years of service, the BFI, and the ProQOL Scale. The results of the study revealed over one-third of the study's population as having a high-risk level for CF, reinforcing inferences that this harmful phenomenon does exist amongst emergency responders. The results also revealed the neuroticism personality trait as significantly significant in predicting the development of CF in this firefighter population. The remaining independent variables lacked statistical significance as predictors of CF in firefighters. In this chapter, I discuss the interpretation of the analysis findings presented

in Chapter 4 in addition to the limitations, recommendations, and implications relative to this study.

Interpretation of the Findings

The demographic variables of EMS license level and years of service did not prove statistically significant as predictors of CF but did provide valuable information for the study. As reflected in Chapter 2, literature searches found no previous studies differentiating between EMS license levels in regards to CF development and there were few studies with firefighters as the population studied. Studies relating helping professionals to CF have popularity for populations such as counselors, therapists, and nurses however, a recent increase in research exploring the differences between specialties and professional groups seem to exist (Smart et al., 2014; Zeidner, Hadar, Matthews, & Roberts, 2013). This further supports the inclusion of EMS license differentiation within this study.

As interest increases to understand and identify the components that place an individual at greatest risk of CF, it is important to identify not only what does increase odds but also what does not influence the odds. The study population of 129 respondents was comprised of 34 EMTs and 95 paramedics with approximately one-third of both license levels found to be at high risk of CF. This is below one suggested average stating that near 50% of helping professionals working with traumatized victims may be at high risk (Zeidner et al., 2013). This finding suggests that license level does not affect the odds of developing CF. Implications also exist that variables associated with this study's

population may act as protective barriers to negative stress responses reducing the risk of occurrence when compared to the suggested average.

In a previous study by Phelps et al. (2009), they found years of service to be a predictive factor in the development of CF. In the current study, years of service proved not statistically significant as a predictor variable for the development of CF.

Nonetheless, its inclusion in the current study still provided valuable information.

Assessment of this variable occurred prior to data analysis to evaluate if representation of an inclusive cross sample of the population existed in the study. Of the 129 participants, the years of service categories each comprised between 13 and 25% of the population, with the smallest category being firefighters with 0 to less than 5 years on the job ($n=17$) at 13% and firefighters with more than 20 years on the job ($n=22$) the second lowest at 17%. Lower representation in these two categories may be the result of lower existing populations in these categories at the participating fire departments due to hiring cycles and retirements.

The remaining three categories had near equivalent representation of 22 to 25%: firefighters with 5 to less than 10 years ($n=30$) at 23%, 10 to less than 15 years ($n=32$) at 25%, and 15 to less than 20 years ($n=28$) at 22%. This cross section sample allowed for analysis of differences in development of CF during the different periods of a firefighter's career. Four of the five categories were comparable with high risk for CF representation ranging from 25 to 33% while the 10 to less than 15 years of service category had a 50% high risk for CF representation.

As reflected in Chapter 2, firefighters are at high-risk for CF as initial responders to traumatic events; however, the individual's level of self-efficacy, collective-efficacy, experience, and competency can have mediating effects on the development of negative stress response (Cicognani et al., 2009; Harr, 2013; Prati et al., 2010, 2011). The increased high-risk representation during the medial period category provides potential implications that a change occurs during this period that affects the mediating factors that provide protection to the firefighter. If further research reproduces a similar differential for this period of a firefighter's career, recommendations should focus on researching what changes are occurring that decrease the firefighters resistance to developing CF.

The third independent variable of personality type proved statistically significant as a predictor for the development of CF in firefighters. The BFI is comprised of five personality traits: Neuroticism, Extraversion, Conscientiousness, Agreeableness, and Openness to Experience (John et al., 1991). The neuroticism trait that is associated with anxiety and depression showed significance ($p < .05$) as a predictor variable in the development of CF in firefighters. This correlates with previous studies described in Chapter 2 that found neuroticism to have a stronger correlation to the outcome of burnout than the other four traits in the measure (Bakker et al., 2006). In this study, neuroticism showed a positive correlation to CF and negative correlation to compassion satisfaction both significant at the .001 level, further supporting this relationship.

Earlier studies reviewed highlighted neuroticism and extraversion as the factors expected to be most relevant in the personality type relationship with stress outcomes. However, agreeableness proved interesting in this logistic regression analysis with a p

=.05 significance. The agreeableness trait associates with altruism and compliance (Feldt, Lee, & Dew, 2014), and although not statistically significant at $p < .05$, it was noted to have a positive correlation to compassion satisfaction and negative correlation to CF at the .001 significance level. Subsequent research of a larger or expanded firefighter population can help explore the potential significance of the agreeableness personality trait in resiliency against compassion fatigue.

As described in the previous chapters, compassion satisfaction, a component of the ProQOL measure, acts as an opposing force to CF and is the pleasure firefighters experience from their work helping others (Bhutani et al., 2012; Harr, 2013; Prati et al., 2010). This positive correlation expands upon literature previous described and inspires further exploration of agreeableness trait as a mediating factor for stress outcomes and quality of life paradigm. While I focused on identifying variables with predictive qualities for the negative response of CF in this study, great value lies in identifying what variables promote and influence the development of the positive response of compassion satisfaction. Focusing not only on mediating variables that increase negative stress responses but also promoting and increasing the pleasure one receives from their work can minimize the impact of the traumatic events experienced as an emergency responder.

Theoretical Framework

Karasek's DC model was the theoretical foundation for this study. As discussed, this model uses the measurements of job demands and job control or resources to explain employee health and burnout (Lourel et al., 2008). The first hypothesis of this model predicts combining high job demands and low job control results in job strain or negative

health outcomes (De Jonge et al., 2010). The literature provided the conceptual support for the work demographics of EMS license level and years of service to influence the job demands and the control the employee experiences; however, not only these organizational factors but also personality can influence the firefighter's feeling of job control.

Neuroticism is associated with anxiety and depression, extraversion associates with activity and assertiveness, openness associates with ideas, conscientiousness associates with order and self-discipline, and agreeableness is altruism and compliance (Feldt et al., 2014). Firefighters with the outcome of job strain, or CF, exhibited higher levels of neuroticism. Neuroticism and extraversion traits are significant predictors of goal orientation making them indirectly related to an individual's goal setting in the work environment (Feldt et al., 2014), which can reduce the firefighters' feeling of job control as a negative affective personality that increases an individual's strain over situations perceived as out of their control (Arnten et al., 2008).

Limitations of the Study

Prior to conducting data collection, some limitations of the study were acknowledged. Completion rate of questionnaires was one concern along with availability of firefighters and their willingness to reveal personal information by participating. Plans to counteract these limitations included method of administering the questionnaire and inclusion of six fire departments. Of the six fire departments invited to participate, four administrators returned signed letters of cooperation which allowed their firefighters the opportunity to participate. This yielded a list of 259 firefighters who

received invitations to participate of which 129 (49.8%) submitted completed questionnaires during a 3-week data collection period. All survey submissions occurred in the online platform to provide complete anonymity to the participant in an effort to encourage feelings of safety in participating. While successful mitigation of the completion rates and willingness to participate limitations occurred, generation of a new limitation also occurred. The built in anonymity made it impossible to verify the completed questionnaires originated from members of the invited population.

Generalizability of this study also incorporates a limitation. The population of this study was restricted to career firefighters with EMS licenses currently employed at fire departments that provide the primary EMS services for their community. This limits generalizability to the broad firefighting profession. Two of the four participating fire departments employ volunteer and part-time firefighters; however, these firefighters did not receive invitations to participate in effort to focus on the full-time, career population with regularly scheduled shifts and exposure to traumatic events.

Recommendations

While the findings of the present study provided contributions to the limited existing research related to the firefighter population, a subsequent study that broadens the type of firefighter population included in the study would improve generalizability. Replicating this study on an expanded firefighter population that includes volunteer, part-time, career and medical first response (MFR) firefighters could provide clarity to this study's findings. With categorization of the United States fire departments being only

8.3% career and 4.5% mostly career, this study was representative of only a small portion of the broad firefighter population (USFA, 2015).

Another recommendation would be to expand the analysis to evaluate the predictive nature of the independent variables on all three of the ProQOL subscales. Whereas much of the literature reviewed focused on the negative outcomes of helping professions and emergency response work, benefit can come from identifying what precipitates positive outcomes such as high levels of compassion satisfaction. The purpose of the present study was to identify predictor variables of the negative outcome of CF to promote development of preventative measures. However, identification of what predicts compassion satisfaction can promote the development of positive, proactive measures.

Finally, the personality variable proved statistically significant in relation to the professional quality of life paradigm. In the literature review, I presented neuroticism and extraversion as the personality traits most likely to affect stress outcomes; however, the current study revealed agreeableness instead of extraversion as having a notable presence amongst this study's population. Expanding the research further exploring the role personality plays in the professional quality of life of firefighters could provide increased clarity to the findings of this current study.

Implications

As previously stated, the learning environment of the workplace facilitates the identities firefighters hold along with how they view their capabilities, drive, and cognitive skills (Dirkx et al., 2004). The development of CF has potentially serious

consequences for the individual, the organization, and the citizens to whom they respond. CF can manifest physical, cognitive, and behavioral symptoms that interfere with job performance and affect personal well-being (Phelps et al., 2009; Smart et al., 2014). The positive social change implications for this study are to increase the understanding of who is at greatest risk for developing CF and implementing preventative measures.

Preventative measures start with leadership. Fire departments have a hierarchical structure with individuals at the top of the hierarchy having influence on the attitudes, perceptions, actions, and values existing within the organizational environment. Fire department leadership needs to understand and recognize the psychological risk component associated with working in the firefighting profession. The individuals in leadership roles within the organization need to generate a perception of acceptance for the psychological risk factor and foster acceptance of admitting its existence when negative stress reactions occur. Elimination of an individual's fear of losing status with his or her coworkers and becoming viewed as undependable or weak needs to occur before comfort with admittance can occur. The organization's leadership has the power to foster such an environment by establishing acceptance and integrity in an individual's acknowledgment of a psychological impact in the same regard he or she would report a physical injury following an incident.

Firefighters may feel as though they should be mentally invincible and resilient to the traumatic events they experience regularly as a component of their profession. However, increased awareness of the reality of negative stress responses such as CF and burnout among the emergency response population can help these men and women

realize they are not immune. Heightened awareness of the psychological impact associated with helping professions will inform the need to build skill sets for the psychological part of the job in addition to those built for the physical. Firefighters are individuals who accomplish feats others could not imagine and are passionate about helping others but the tragedies they regularly face can become overwhelming. Regulating agencies require minimum annual training to ensure the physical safety of the firefighters and the public they serve but firefighters need to place equal importance on including training to protect their psychological well-being.

Research has highlighted a firefighter's resistance to having transparency in revealing what he or she fears fellow firefighters may perceive as weakness (Vashdi et al., 2012). Firefighters function in a high risk environment in which their lives literally depend on each other. The fear of appearing undependable to coworkers in such a dangerous work environment can be hindering to help seeking and admission. Acceptance and recognition by organizational leadership and regulating agencies can assist a firefighter's comfort with revealing perceived weaknesses including psychological distress. Support fostered through education, acknowledgement, and care efforts can help improve comfort in expressing a need for help and promote feelings of continued acceptance for those individuals who express that need.

The social change can occur at both the individual and professional or organizational level. At the individual level, firefighters can self-initiate taking the measures described in this study to assess their personality traits and stress response. Self-awareness can help provide understanding and insight related to how they interpret

and react to their work environment. It will also provide opportunity to build coping mechanisms and mediating skill sets most applicable to identified individual needs in order to promote psychological resiliency. Education pertaining to personality types and professional quality of life components can help individuals understand their assessment scores, individual needs, and types of coping mechanisms. Utilization or implementation can occur during an entry-level stage or at any time during an individual's career.

At the professional or organizational level, utilization of the ProQOL measure can assess the risk level existing within the organization and advise implementation needs for preventative training such as teaching coping mechanisms. Conscious acceptance of the potential negative psychological effects of emergency response work allows for proactive actions by organizations to protect the emotional wellbeing of their employees. Links exist between CF and decreased job interest, attendance, and performance. Organizations need to incorporate policies that promote psychological wellbeing and care. Employees with lower risk of compassion fatigue and burnout are more likely to experience pleasure from their work, show increased job interest and performance, and have job retention.

Additionally, assessing personality type during initial training or hiring processes can allow screening of individuals for early identification and education implementation. An approach such as this can help individuals at the onset of their career know how to protect themselves not only physically but also psychologically. This preventative perspective approach has potential to prove more beneficial to both individuals and the organization than the too common reactive stance. Implemented education regarding the

increased risk level associated with personality traits and healthy coping mechanisms can mitigate or reduce the risks associated with repetitive trauma exposure.

This study provides added insight into what influences the development of CF among firefighters. However, there is a need for additional research to explore this phenomenon. Further understanding the impact of personality type and traits on coping mechanisms and stress outcomes within the emergency responder population will not only benefit the responders but also the community members whom rely upon them in times of great need. Moreover, focused research that seeks to identify variables that predict or influence high levels of compassion satisfaction in responders regularly exposed to traumatic events could be instrumental in promoting psychological wellbeing.

Conclusion

Firefighters are emergency responders relied upon in times of great need. These responders unselfishly assume great risk every day they go to work. Development of CF can make a firefighter ineffective in performing their job placing both the firefighter and the citizens they serve at risk (Hunsaker, Chen, Maughan, & Heaston, 2015). The ultimate goal is to provide for and protect the psychological well-being of these providers so they are able to provide services during times of great need. Striving to continue to understand what predicts high risk levels of CF and learning what promotes high levels of compassion satisfaction can help achieve this goal.

Documented negative effects of developing CF exist in the current and previous studies. In this study, I also provided some additional insight as to predictor variables for the development of CF among firefighters. However, gaining additional knowledge and

understanding is not enough. Application of acquired knowledge is necessary to develop preventative measures that promote firefighter health and wellbeing. It is not possible to control the amount of trauma firefighters experience in the line of duty but it is possible to control efforts promoting satisfaction derived from the job.

References

- Adams, R. E., Boscarino, J. A., & Figley, C. R. (2006). Compassion fatigue and psychological distress among social workers: A validation study. *American Journal of Orthopsychiatry*, 76(1), 103-108. <http://dx.doi.org/10.1037/0002-9432.76.1.103>
- Appricon. (2010). Logistic regression analysis and interpretation. Retrieved from <http://appricon.com/index.php/logistic-regression-analysis.html>
- Argentero, P., & Setti, I. (2011). Engagement and vicarious traumatization in rescue workers. *International Archives of Occupational and Environmental Health*, 84, 67-75. <http://dx.doi.org/10.1007/s00420-010-0601-8>
- Arnten, A. A., Jansson, B., & Archer, T. (2008). Influence of affective personality type and gender upon coping behavior, mood, and stress. *Individual Differences Research*, 6(3), 139-168. Retrieved from <https://www.researchgate.net/publication/233863434>
- Bakker, A. B., Van der Zee, K. I., Lewig, K. A., & Dollard, M. F. (2006). The relationship between the big five personality factors and burnout: A study among volunteer counselors. *Journal of Social Psychology*, 146(1), 31-50. <http://dx.doi.org/10.3200/socp.146.1.31-50>
- Berzoff, J., & Kita, E. (2010). Compassion fatigue and countertransference: Two different concepts. *Clinical Social Work Journal*, 38, 341-349. <http://dx.doi.org/10.1007/s10615-010-0271-8>
- Bhutani, J., Bhutani, S., Balhara, Y. P., & Kalra, S. (2012). Compassion fatigue and

- burnout amongst clinicians: A medical exploratory study. *Indian Journal of Psychological Medicine*, 34(4), 332-337. <http://dx.doi.org/10.4103/0253-7176.108206>
- Bood, S., Archer, T., & Norlander, T. (2004). Affective personality in relation to general personality, self-reported stress, coping, and optimism. *Individuals Differences Research*, 2(1), 26-37. Retrieved from <https://www.researchgate.net/publication/232550909>
- Bride, B. E., Radey, M., & Figley, C. R. (2007). Measuring compassion fatigue. *Clinical Social Work Journal*, 35, 155-163. <http://dx.doi.org/10.1007/s10615-007-0091-7>
- Bureau of Labor Statistics. (2015). Occupational employment statistics. Retrieved from http://www.bls.gov/oes/current/oes_29620.htm
- Cacciatore, J., Carlson, B., Michaelis, E., Klimek, B., & Steffan, S. (2011). Crisis intervention by social workers in fire departments: An innovative role for social workers. *Social Work*, 56(1), 81-88. <http://dx.doi.org/10.1093/sw/56.1.81>
- Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Belmont, CA: Wadsworth.
- Campbell Rinker. (2015). Surveys. Retrieved from <http://www.campbellrinker.com/surveys.html>
- Chen, Y., Chen, M., Chou, F. H., Sun, F., Chen, P., Tsai, K., & Chao, S. (2007). The relationship between quality of life and posttraumatic stress disorder or major depression for firefighters in Kaohsiung, Taiwan. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care &*

Rehabilitation, 16(8), 1289-1297. <http://dx.doi.org/10.1007/s11136-007-9248-7>

Cicognani, E., Pietrantonio, L., Palestini, L., & Prati, G. (2009). Emergency workers' quality of life: The protective role of sense of community, efficacy beliefs and coping strategies. *Social Indicators Research*, 94(3), 449-463.

<http://dx.doi.org/10.1007/s11205-009-9441-x>

Craig, C. D., & Sprang, G. (2010). Compassion satisfaction, compassion fatigue, and burnout in a national sample of trauma treatment therapists. *Anxiety, Stress, & Coping*, 23(3), 319-339. <http://dx.doi.org/10.1080/10615800903085818>

De Jonge, J., Van Vegchel, N., Shimazu, A., Schaufeli, W., & Dormann, C. (2010). A longitudinal test of the demand-control model using specific job demands and specific job control. *International Journal of Behavioral Medicine*, 17, 125-133.

<http://dx.doi.org/10.1007/s12529-010-9081-1>

Dirkx, J. M., Gilley, J. W., & Gilley, A. M. (2004). Change theory in CPE and HRD: Toward a holistic view of learning and change in work. *Advances in Developing Human Resources*, 6(1), 35-51. <http://dx.doi.org/10.1177/1523422303260825>

Evans, S., Patt, I., Giosan, C., Spielman, L., & Difede, J. (2009). Disability and posttraumatic stress disorder in disaster relief workers responding to September 11, 2001 World Trade Center disaster. *Journal of Clinical Psychology*, 65(7), 684-694. <http://dx.doi.org/10.1002/jclp.20575>

Feldt, R. C., Lee, J., & Dew, D. (2014). Criterion validity of facets versus domains of the Big Five Inventory. *Individual Differences Research*, 12(3), 112-122. Retrieved from www.idr-journal.com

- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Los Angeles, CA: Sage.
- Frankfort-Nachmias, C., & Nachmias, D. (2008). *Research methods in the social sciences* (7th ed.). New York, NY: Worth.
- Gallagher, R. (2013). Compassion fatigue. *Canadian Family Physician*, 59(3), 265-268. Retrieved from <http://www.cfp.ca>
- Gyorkos, C., Becker, J., Massoudi, K., De Bruin, G. P., & Rossier, J. (2012). The impact of personality and culture on the job demands-control model of job stress. *Swiss Journal of Psychology*, 71(1), 21-28. <http://dx.doi.org/10.1024/1421-0185/a000065>
- Harr, C. (2013). Promoting workplace health by diminishing the negative impact of compassion fatigue and increasing compassion satisfaction. *Social Work & Christianity*, 40(1), 71-88. Retrieved from www.nacsw.org
- Hochwalder, J. (2009). Burnout among Torgerson's eight personality types. *Social Behavior and Personality*, 37(4), 467-480. <http://dx.doi.org/10.2224/sbp.2009.37.4.467>
- Hofmann, P. B. (2009). Addressing compassion fatigue. The problem is not new, but it requires more urgent attention. *Healthcare Executive*, 24(5), 40-42. Retrieved from http://www.ache.org/HEOnline/digital/heonline_index.cfm
- Howard, S., & Hughes, B. M. (2012). Construct, concurrent and discriminant validity of type D personality in the general population: Associations with anxiety, depression, stress and cardiac output. *Psychology & Health*, 27(2), 242-258.

<http://dx.doi.org/10.1080/08870446.2011.603423>

Hudson, J. I., Pope, Jr., H. G., & Gynn, R. J. (2005). The cross-sectional cohort study: An underutilized design. *Epidemiology, 16*(3), 355-359.

<http://dx.doi.org/10.1097/01.ede.0000158224.50593.e3>

Hunsaker, S., Chen, H., Maughan, D., & Heaston, S. (2015). Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. *Journal of Nursing Scholarship, 47*(2), 186-194.

<http://dx.doi.org/10.1111/jnu.12122>

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). *The Big Five Inventory* (Versions 4a and 54) [Measurement instrument]. Retrieved from

<https://www.ocf.berkeley.edu/~johnlab/bfi.htm>

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big-Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 114-158). New York, NY: Guilford Press.

Kamarulzaman, W., & Nordin, M. S. (2012). *Confirmatory factor analysis on the big 5 personality test inventory*. Paper presented at the Southeast Asia Psychology, Malaysia. Retrieved from <http://files.eric.ed.gov/fulltext/ED535762.pdf>

LaFauci Shutt, J. M., & Marotta, S. M. (2011). Personal and environmental predictors of posttraumatic stress in emergency management professionals. *Psychological Trauma: Theory, Research, Practice, and Policy, 3*(1), 8-15.

<http://dx.doi.org/10.1037/a0020588>

Laerd Dissertation. (2012). Statistical regression and internal validity. Retrieved from

<http://dissertation.laerd.com/internal-validity-p4.php>

Latham, J. (2015). Conceptual framework. Retrieved from

<http://johnlatham.me/frameworks/research-methods-framework/conceptual-framework/>

LifeMed Inc. (2013). EMS certification levels. Retrieved from

<http://www.lifemedems.com/certs.htm>

Lourel, M., Abdellaoui, S., Chevaleyre, S., Paltrier, M., & Gana, K. (2008). Relationships between psychological job demands, job control and burnout among firefighters.

North American Journal of Psychology, 10(3), 489-495. Retrieved from

www.socialpsychology.org/download/9113/LourelNAJP2008.pdf

Mann, C. (2003). Observational research methods. Research design II: cohort, cross

sectional, and case-control studies. *Emergency Medicine Journal*, 20(1), 54-60.

<http://dx.doi.org/10.1136/emj.20.1.54>

Meadors, P., Lamson, A., Swanson, M., White, M., & Sira, N. (2009). Secondary

traumatization in pediatric healthcare providers: Compassion fatigue, burnout, and secondary traumatic stress. *OMEGA*, 60(2), 103-128.

<http://dx.doi.org/10.2190/OM.60.2.a>

Morgan, B., & De Bruin, K. (2010). The relationship between the big five personality

traits and burnout in South African university students. *South African Journal of*

Psychology, 40(2), 182-191. <http://dx.doi.org/10.1177/008124631004000208>

Morren, M., Dirkzwager, A. J., Kessels, F. J., & Yzermans, C. J. (2007). The influence of

a disaster on the health of rescue workers: A longitudinal study. *Canadian Medical Association Journal*, 176(9), 1279-1283.

<http://dx.doi.org/10.1503/cmaj.060626>

Oliveira, J. P. (2011). *Extraversion, neuroticism and burnout among urban firefighters: The role of personality on everyday work environment*. Paper presented at the

Work, Stress, and Health Conference Presentation, Orlando, FL.

<http://dx.doi.org/10.1037/e509382012-001>

Papovic, S. (2009). Professional burnout syndrome. *Materia Socio Medica*, 21(4), 213-215. Retrieved from <http://www.scopemed.org/?mno=6941>

Phelps, A., Lloyd, D., Creamer, M., & Forbes, D. (2009). Caring for carers in the aftermath of trauma. *Journal of Aggression, Maltreatment & Trauma*, 18(3), 313-330. <http://dx.doi.org/10.1080/10926770902835899>

Prati, G., Pietrantonio, L., & Cicognani, E. (2010). Self-efficacy moderates the relationship between stress appraisal and quality of life among rescue workers. *Anxiety, Stress, and Coping*, 23(4), 463-470. <http://dx.doi.org/10.1080/10615800903431699>

Prati, G., Pietrantonio, L., & Cicognani, E. (2011). Coping strategies and collective efficacy as mediators between stress appraisal and quality of life among rescue workers. *International Journal of Stress Management*, 18(2), 181-195.

<http://dx.doi.org/10.1037/a0021298>

Revicki, D. A., & Gershon, R. R. (1996). Work-related stress and psychological distress in emergency medical technicians. *Journal of Occupational Health Psychology*, 1(4), 391-396. <http://dx.doi.org/10.1037/1076-8998.1.4.391>

- Rubino, C., Perry, S. J., Milam, A. C., Spitzmueller, C., & Zapf, D. (2012). Demand-control-person: Integrating the demand-control and conservation of resources models to test and expanded stressor-strain model. *Journal of Occupational Health Psychology, 17*(4), 456-472. <http://dx.doi.org/10.1037/a0029718>
- Rudestam, K. E., & Newton, R. R. (2007). *Surviving your dissertation: A comprehensive guide to the content and process* (3rd ed.). Los Angeles, CA: Sage.
- Sinclair, M. (2007). A guide to understanding theoretical and conceptual frameworks. *Evidence Based Midwifery, 5*(2), 39. Retrieved from <http://www.doctoralmidwiferysociety.org/Portals/c8d3e3f8-9c01-4bf5-abd9-3fd6b4c510ae/marleneeditorialtheoreticlaframework.pdf>
- Smart, D., English, A., James, J., Wilson, M., Daratha, K. B., Childers, B., & Magera, C. (2014). Compassion fatigue and satisfaction: A cross-sectional survey among US healthcare workers. *Nursing and Health Sciences, 16*, 3-10. <http://dx.doi.org/10.1111/nhs.12068>
- Sprang, G., Clark, J. J., & Whitt-Woosley, A. (2007). Compassion fatigue, compassion satisfaction, and burnout: Factors impacting a professional's quality of life. *Journal of Loss and Trauma, 12*, 259-280. <http://dx.doi.org/10.1080/15325020701238093>
- Stamm, B. H. (2010). *The concise ProQOL manual* (2nd ed.). Pocatello, ID: ProQOL.org.
- Statistics Solutions. (2014). Logistic regression. Retrieved from <http://www.statisticssolutions.com/regression-analysis-logistic-regression/>

- StatsProf (2013). When to use logistic regression. Retrieved from
<http://logisticregressionanalysis.com/33-when-to-use-logistic-regression/>
- The Writing Studio. (2015). Written surveys. Retrieved from
<http://writing.colostate.edu/guides/page.cfm?pageid=1404&guideid=68>
- Tri-County Emergency Medical Control Authority. (2011). *Responsibilities of participants in MCA*. TCEMCA Systems Protocols (Section 6-34). Lansing, MI.
- Trochim, W. M. (2006). Survey research. Retrieved from
<http://www.socialresearchmethods.net/kb/survey.php>
- Tuckey, M. R., & Hayward, R. (2011). Global and occupation-specific emotional resources as buffers against emotional demands of fire-fighting. *Applied Psychology: An International Review*, 60(1), 1-23.
<http://dx.doi.org/10.1111/j.1464-0597.2010.00424.x>
- U S fire administration. (2015). National fire department census quick facts. Retrieved from <http://apps.usfa.fema.gov/census/summary.cfm>
- Van Hook, M. P., & Rothenberg, M. (2009). Quality of life and compassion satisfaction/fatigue and burnout in child welfare workers: A study of the child welfare workers in community based care organizations in Central Florida. *Social Work & Christianity*, 36(1), 36-54. Retrieved from www.nacsw.org
- Vashdi, D. R., Bamberger, P. A., & Bacharach, S. (2012). Effects of job control and situational severity on the timing of help-seeking. *Journal of Occupational Health Psychology*, 17(2), 206-219. <http://dx.doi.org/10.1037/a0026858>
- Vettor, S. M., & Kosinski, Jr., F. A. (2000). Work-stress burnout in emergency medical

technicians and the use of early recollections. *Journal of Employment Counseling*, 37(4), 216-228. <http://dx.doi.org/10.1002/j.2161-1920.2000.tb01028.x>

Woods, S. A., & Hampson, S. E. (2005). Measuring the big five with single items using a bipolar response scale. *European Journal of Personality*, 19, 373-390. <http://dx.doi.org/10.1002/per.542>

Zeidner, M., Hadar, D., Matthews, G., & Roberts, R. D. (2013). Personal factors related to compassion fatigue in health professionals. *Anxiety, Stress, & Coping*, 26(6), 595-609. <http://dx.doi.org/10.1080/10615806.2013.777045>

Appendix A: Big Five Inventory

How I am in general

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which **you agree or disagree with that statement**.

1 Disagree Strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly
---------------------------	---------------------------	------------------------------------	------------------------	------------------------

I am someone who...

- | | |
|---|--|
| 1. ____ Is talkative | 23. ____ Tends to be lazy |
| 2. ____ Tends to find fault with others | 24. ____ Is emotionally stable, not easily upset |
| 3. ____ Does a thorough job | 25. ____ Is inventive |
| 4. ____ Is depressed, blue | 26. ____ Has an assertive personality |
| 5. ____ Is original, comes up with new ideas | 27. ____ Can be cold and aloof |
| 6. ____ Is reserved | 28. ____ Perseveres until the task is finished |
| 7. ____ Is helpful and unselfish with others | 29. ____ Can be moody |
| 8. ____ Can be somewhat careless | 30. ____ Values artistic, aesthetic experiences |
| 9. ____ Is relaxed, handles stress well. | 31. ____ Is sometimes shy, inhibited |
| 10. ____ Is curious about many different things | 32. ____ Is considerate and kind to almost everyone |
| 11. ____ Is full of energy | 33. ____ Does things efficiently |
| 12. ____ Starts quarrels with others | 34. ____ Remains calm in tense situations |
| 13. ____ Is a reliable worker | 35. ____ Prefers work that is routine |
| 14. ____ Can be tense | 36. ____ Is outgoing, sociable |
| 15. ____ Is ingenious, a deep thinker | 37. ____ Is sometimes rude to others |
| 16. ____ Generates a lot of enthusiasm | 38. ____ Makes plans and follows through with them |
| 17. ____ Has a forgiving nature | 39. ____ Gets nervous easily |
| 18. ____ Tends to be disorganized | 40. ____ Likes to reflect, play with ideas |
| 19. ____ Worries a lot | 41. ____ Has few artistic interests |
| 20. ____ Has an active imagination | 42. ____ Likes to cooperate with others |
| 21. ____ Tends to be quiet | 43. ____ Is easily distracted |
| 22. ____ Is generally trusting | 44. ____ Is sophisticated in art, music, or literature |
-

SCORING INSTRUCTIONS

To score the BFI, you'll first need to **reverse-score** all negatively-keyed items:

Extraversion: 6, 21, 31
 Agreeableness: 2, 12, 27, 37
 Conscientiousness: 8, 18, 23, 43
 Neuroticism: 9, 24, 34
 Openness: 35, 41

To recode these items, you should subtract your score for all reverse-scored items from 6. For example, if you gave yourself a 5, compute 6 minus 5 and your recoded score is 1. That is, a score of 1 becomes 5, 2 becomes 4, 3 remains 3, 4 becomes 2, and 5 becomes 1.

Next, you will create scale scores by *averaging* the following items for each B5 domain (where R indicates using the reverse-scored item).

Extraversion: 1, 6R 11, 16, 21R, 26, 31R, 36
 Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42
 Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R
 Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39
 Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

SPSS SYNTAX

*** REVERSED ITEMS

RECODE

```
bfi2 bfi6 bfi8 bfi9 bfi12 bfi18 bfi21 bfi23 bfi24 bfi27 bfi31 bfi34 bfi35
bfi37 bfi41 bfi43
(1=5) (2=4) (3=3) (4=2) (5=1) INTO bfi2r bfi6r bfi8r bfi9r bfi12r bfi18r bfi21r bfi23r bfi24r
bfi27r bfi31r bfi34r bfi35r bfi37r bfi41r bfi43r.
EXECUTE .
```

*** SCALE SCORES

```
COMPUTE bfi_e = mean(bfi1,bfi6r,bfi11,bfi16,bfi21r,bfi26,bfi31r,bfi36) .
VARIABLE LABELS bfi_e 'BFI Extraversion scale score'.
EXECUTE .
```

```
COMPUTE bfi_a = mean(bfi2r,bfi7,bfi12r,bfi17,bfi22,bfi27r,bfi32,bfi37r,bfi42) .
VARIABLE LABELS bfi_a 'BFI Agreeableness scale score' .
EXECUTE .
```

```
COMPUTE bfi_c = mean(bfi3,bfi8r,bfi13,bfi18r,bfi23r,bfi28,bfi33,bfi38,bfi43r) .
VARIABLE LABELS bfi_c 'BFI Conscientiousness scale score' .
EXECUTE .
```

```
COMPUTE bfi_n = mean(bfi4,bfi9r,bfi14,bfi19,bfi24r,bfi29,bfi34r,bfi39) .
VARIABLE LABELS bfi_n 'BFI Neuroticism scale score' .
```

EXECUTE .

```
COMPUTE bfi0 = mean(bfi5,bfi10,bfi15,bfi20,bfi25,bfi30,bfi35r,bfi40,bfi41r,bfi44) .  
VARIABLE LABELS bfi0 'BFI Openness scale score' .  
EXECUTE .
```

The Big Five Inventory <https://www.ocf.berkeley.edu/~johnlab/bfi.htm>

I hold the copyright to the BFI and it is not in the public domain per se. However, it is freely available for researchers to use for non-commercial research purposes. Please keep us posted on your findings.

Copyright © 2007-9 Berkeley Personality Lab | Designed by edg3.co.uk

Appendix B: Professional Quality of Life Scale

PROFESSIONAL QUALITY OF LIFE SCALE (PROQOL)

COMPASSION SATISFACTION AND COMPASSION FATIGUE
(PROQOL) VERSION 5 (2009)

When you [help] people you have direct contact with their lives. As you may have found, your compassion for those you [help] can affect you in positive and negative ways. Below are some questions about your experiences, both positive and negative, as a [helper]. Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the last 30 days.

	1=Never	2=Rarely	3=Sometimes	4=Often	5=Very Often
_____ 1.					
_____ 2.					
_____ 3.					
_____ 4.					
_____ 5.					
_____ 6.					
_____ 7.					
_____ 8.					
_____ 9.					
_____ 10.					
_____ 11.					
_____ 12.					
_____ 13.					
_____ 14.					
_____ 15.					
_____ 16.					
_____ 17.					
_____ 18.					
_____ 19.					
_____ 20.					
_____ 21.					
_____ 22.					
_____ 23.					
_____ 24.					
_____ 25.					
_____ 26.					
_____ 27.					
_____ 28.					
_____ 29.					
_____ 30.					

YOUR SCORES ON THE PROQOL: PROFESSIONAL QUALITY OF LIFE SCREENING

Based on your responses, place your personal scores below. If you have any concerns, you should discuss them with a physical or mental health care professional.

Compassion Satisfaction _____

Compassion satisfaction is about the pleasure you derive from being able to do your work well. For example, you may feel like it is a pleasure to help others through your work. You may feel positively about your colleagues or your ability to contribute to the work setting or even the greater good of society. Higher scores on this scale represent a greater satisfaction related to your ability to be an effective caregiver in your job.

The average score is 50 (SD 10; alpha scale reliability .88). About 25% of people score higher than 57 and about 25% of people score below 43. If you are in the higher range, you probably derive a good deal of professional satisfaction from your position. If your scores are below 40, you may either find problems with your job, or there may be some other reason—for example, you might derive your satisfaction from activities other than your job.

Burnout _____

Most people have an intuitive idea of what burnout is. From the research perspective, burnout is one of the elements of Compassion Fatigue (CF). It is associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively. These negative feelings usually have a gradual onset. They can reflect the feeling that your efforts make no difference, or they can be associated with a very high workload or a non-supportive work environment. Higher scores on this scale mean that you are at higher risk for burnout.

The average score on the burnout scale is 50 (SD 10; alpha scale reliability .75). About 25% of people score above 57 and about 25% of people score below 43. If your score is below 43, this probably reflects positive feelings about your ability to be effective in your work. If you score above 57 you may wish to think about what at work makes you feel like you are not effective in your position. Your score may reflect your mood; perhaps you were having a "bad day" or are in need of some time off. If the high score persists or if it is reflective of other worries, it may be a cause for concern.

Secondary Traumatic Stress _____

The second component of Compassion Fatigue (CF) is secondary traumatic stress (STS). It is about your work related, secondary exposure to extremely or traumatically stressful events. Developing problems due to exposure to other's trauma is somewhat rare but does happen to many people who care for those who have experienced extremely or traumatically stressful events. For example, you may repeatedly hear stories about the traumatic things that happen to other people, commonly called Vicarious Traumatization. If your work puts you directly in the path of danger, for example, field work in a war or area of civil violence, this is not secondary exposure; your exposure is primary. However, if you are exposed to others' traumatic events as a result of your work, for example, as a therapist or an emergency worker, this is secondary exposure. The symptoms of STS are usually rapid in onset and associated with a particular event. They may include being afraid, having difficulty sleeping, having images of the upsetting event pop into your mind, or avoiding things that remind you of the event.

The average score on this scale is 50 (SD 10; alpha scale reliability .81). About 25% of people score below 43 and about 25% of people score above 57. If your score is above 57, you may want to take some time to think about what at work may be frightening to you or if there is some other reason for the elevated score. While higher scores do not mean that you do have a problem, they are an indication that you may want to examine how you feel about your work and your work environment. You may wish to discuss this with your supervisor, a colleague, or a health care professional.

WHAT IS MY SCORE AND WHAT DOES IT MEAN?

In this section, you will score your test so you understand the interpretation for you. To find your score on **each section**, total the questions listed on the left and then find your score in the table on the right of the section.

Compassion Satisfaction Scale

Copy your rating on each of these questions on to this table and add them up. When you have added them up you can find your score on the table to the right.

3. ____
6. ____
12. ____
16. ____
18. ____
20. ____
22. ____
24. ____
27. ____
30. ____

Total: ____

The sum of my Compassion Satisfaction questions is	So My Score Equals	And my Compassion Satisfaction level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

Burnout Scale

On the burnout scale you will need to take an extra step. Starred items are "reverse scored." If you scored the item 1, write a 5 beside it. The reason we ask you to reverse the scores is because scientifically the measure works better when these questions are asked in a positive way though they can tell us more about their negative form. For example, question 1. "I am happy" tells us more about

- *1. ____ = ____
*4. ____ = ____
8. ____
10. ____
*15. ____ = ____
*17. ____ = ____
19. ____
21. ____
26. ____
*29. ____ = ____

Total: ____

The sum of my Burnout Questions is	So my score equals	And my Burnout level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

You Wrote	Change to
	5
2	4
3	3
4	2
5	1

the effects of helping when you are not happy so you reverse the score

Secondary Traumatic Stress Scale

Just like you did on Compassion Satisfaction, copy your rating on each of these questions on to this table and add them up. When you have added them up you can find your score on the table to the right.

2. ____
5. ____
7. ____
9. ____
11. ____
13. ____
14. ____
23. ____
25. ____
28. ____

Total: ____

The sum of my Secondary Trauma questions is	So My Score Equals	And my Secondary Traumatic Stress level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

Request ProQOL Use Permission

(a) Standard Use Permissions

You may also use the ProQOL in for-profit settings such as a training course as long as the course is the item sold, not the ProQOL which may be used in the course.

The ProQOL measure may be freely copied as long as (a) author is credited, (b) no changes are made other than those authorized below, and (c) it is not sold. You may substitute the appropriate target group for / [helper] / if that is not the best term. For example, if you are working with teachers, replace / [helper] /with teacher. Word changes may be made to any word in italicized square brackets to make the measure read more smoothly for a particular target group.

Additionally you are granted permission to convert the ProQOL into other formats such as a computerized or taped version for the visually impaired.

Permission to Use the ProQOL

If you would like to use the ProQOL: Compassion Satisfaction and Compassion Fatigue for the standard permissions are granted on the measure itself (see sidebar here). We understand that there are times when a formal permissions document is helpful or necessary. If you would like a formal permission to use from us, please complete the form below. .

Item Wording Changes Most wording changes are options as specified on the measure itself. The term "helper" and "helping" are generic and may not fit with your organizational or ethno- cultural community. We invite you to use terms that fit better for you. Most alteratinos are quite simple. For example, "helper" might be changed to "teacher". Sometimes changes are more complicated and there may be more issues involved than the standard word substitution. In those cases, use the contact us form.

Permissions for Translations or Editing of Existing Translations If you would like to translate the ProQOL into a language other than English we are delighted help you. We will work with you to assist with understanding the intentions and nuances of items to help improve the translations. We request that you donate a copy of the translation so that others can use it. We recognize that translations improve over time. If you would like to refine an existing translation, or help update it from the ProQOL IV, we are pleased to work with you.

Other Permissions If you would like to make changes other than those allowed under the standard use permissions or identified above, please use the contact us form and we will work with you to see how we can meet your needs and the statistical needs of the measure.

Starred * fields are required

Type of permission requested.

Please check all that apply.

- Permission to Use
- Permission for Wording Change
- Permission for Format Change
- Permission to Translate or Update Translation

Please tell us briefly about your project (1-3 sentences): *

My doctoral research is looking at predictor variables of compassion fatigue in firefighters.

Proposed wording change (if appropriate):

Change "Helper" to "Firefighter"
Change "Help" to "Respond to"

Translation request: (if appropriate). Please tell us what language and if you want to create a new translation or improve an existing one.

Type of Format Change:

Place in an online format using Survey Monkey for purpose of online distribution to participants.