Risk factors, work-related stressors and social support for ambulance personnel in New Zealand: An exploration of organisational and operational stressors and the importance of perceived social support

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Abstract

Ambulance personnel have one of the most stressful jobs across a wide range of occupations, and frequently experience operational and organisational stressors and are exposed to an increased level of traumatic events. As a result of these work-related stressors, ambulance personnel can experience psychological distress, specifically, posttraumatic stress symptoms (PTSS) and depression. A frequently researched coping strategy used to protect against psychological distress is social support. Thus, this research provides an exploration of work-related stressors, psychological distress and the impact social support can have on psychological distress for New Zealand ambulance personnel. A total of 183 ambulance personnel participated in the current research by completing an online survey. The final sample consisted of 125 ambulance personnel. Results showed that direct traumatic exposure, organisational stressors, male gender, and perceived support significantly associated with psychological distress. Operational stress did not relate to psychological distress, and organisational stress was more strongly related to depression. Perceived social support predicted both depression and PTSS, whereas received support did not predict either type of psychological distress. Perceived support was mildly associated with received support, depression and all three sources of support (spouse/family, colleagues and supervisors). Received support was not associated with either type of psychological distress, although did show a relationship with spouse/family support and supervisor support. Spouse/family support was perceived as the strongest source of support, followed by colleague support and lastly supervisor support. Social support did not impact the relationship between direct traumatic exposure and PTSS. Implications of these results are discussed.

This research contributes to the literature focused on work-related stressors, and perceived support, highlighting the important impact both organisational stressors and perceived

support can have on ambulance personnel. It is hoped that conclusions drawn from this research will have beneficial implications for ambulance personnel, their families and the organisations in which they work in.

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I would like to first acknowledge Wellington Free Ambulance for enthusiastically opening their workplace up for this research. This research would not have been possible without the valuable participants who took part in the survey, as well as Chris Wright, who championed the project from the start.

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“Ehara taku toa i te toa takitahi, engari kē he toa takitini” – My success should not be bestowed onto me alone, it was not individual success but the success of a collective.

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Preface

This thesis is comprised of both manuscripts prepared for submission to academic journals and thesis chapters. The focus is on New Zealand ambulance personnel's levels of psychological distress, work-related stressors, and social support. The manuscripts summarise the current literature of the impact of social support on psychological distress in the context of traumatic exposure and work-related stress, and investigate risk factors for psychological distress and work-related stressors, as well as the importance of perceived social support for ambulance personnel. The chapters introduce the thesis, detail the methodological processes, provide a general discussion of the findings and offer some reflections on this thesis journey.

With the exception of page numbers and in-text figures and tables, manuscripts are presented in submission format. A single reference list is provided at the end of the thesis, in order to maintain a coherent flow across the thesis. Figures and tables are numbered with the chapter number first, followed by the figure or table number, for example 1.1 to avoid confusion between manuscripts. Attempts were made to keep repetition across manuscripts to a minimum; however, some repetition was unavoidable in order to ensure that each manuscript provided enough information as a standalone manuscript for publication. Where text is presented for a second time, (e.g., the method sections of manuscripts), it is presented in grey rather than black typography.

Chapter One:

Thesis overview

Overview

The current research project investigates psychological distress, work-related stressors and social support in Wellington Free Ambulance personnel. This was an opportunity to further scientific evidence in the population of ambulance personnel in New Zealand. Wellington Free Ambulance wanted to be aware of any psychological difficulties and follow this up with appropriate interventions for personnel. This opened up the opportunity for a research project to focus on the occupational context and how this can result in psychological distress, as well as how social support, a frequently identified protective factor and intervention, can impact this distress for Wellington Free Ambulance personnel.

There is a paucity of research with a focus on ambulance personnel internationally, as well as in New Zealand. There have been a few New Zealand studies which include ambulance personnel as part of the wider first responder population (e.g., Brough, 2004; Brough, 2005), but there appears to be no research specifically with New Zealand ambulance personnel. This research project submitted as a thesis, will thus add to this limited research, with a focus on New Zealand ambulance personnel's levels of psychological distress, work-related stressors, and social support.

The main purpose of this research is to develop an understanding of potential risk factors for psychological distress for ambulance personnel, and whether social support can protect against psychological distress in the context of these identified risk factors, and in the face of traumatic exposure and work-related stress. This resulted in the following specific research questions:

1. What are the risk factors for psychological distress for ambulance personnel?

2. Do perceived social support and received social support have the same impact on psychological distress for ambulance personnel?
3. Does social support moderate the relationship between work-related stress and psychological distress?
4. What sources of support are perceived to be the most supportive?
5. Is there a difference between male and female ambulance personnel in terms of risk factors, psychological distress, and social support?

The current project will provide data regarding rates of psychological distress for ambulance personnel at Wellington Free Ambulance, as well as some of the important and addressable risk factors which contribute to this distress. It will also consider the impact work-related stressors and social support can have on psychological distress and provide an opportunity to use this information to develop relevant and effective interventions.

Structure

This thesis is written with publications, and structured into eight chapters, three of which are presented as manuscripts for journal submission. Between each manuscript, there is a short section linking the chapters together. These are used to guide readers through the thesis and situate each chapter within the context of the thesis as a whole.

The current chapter presents an overview of the thesis, its structure, and a rationale for this project. Chapter two introduces key concepts and theories used in this thesis and discusses the New Zealand and international context for ambulance personnel. Chapter three is presented in manuscript form to be submitted for publication, and reviews the existing literature concerning social support for ambulance personnel. Chapter four provides a detailed description of the methodological process of the current study including definitions of key variables and data collection and analysis process. Chapter five is presented in manuscript form, which has been accepted for publication, and investigates

work-related stress, traumatic exposure and gender as risk factors of psychological distress for ambulance personnel. Chapter six is presented in manuscript form, currently under review for publication, and investigates the impact social support has on psychological distress in the context of work-related stressors and the importance of perceived social support. Chapter seven provides a general discussion and conclusion about the thesis as a whole, implications of this research, as well as suggesting possible areas of future research. Finally, chapter eight discusses my own reflections from this journey.

Chapter Two:

Introduction

"Kia ora te tangata" – Keeping people alive/keep people living.

This whakatukī was bestowed upon Wellington Free Ambulance in 2010 and captures the essence of what Wellington Free Ambulance personnel do. It encompasses the importance of people, and also speaks to the benefits of social support to health, wellbeing, and living.

Overview

First responders work in stressful work environments with operational and organisational stressors, where they are exposed to more traumatic events than the general population (Lewis-Schroeder et al., 2018). Operational stressors include traumatic events, such as the death of a patient, and also experiences such as attending dangerous calls (Hart et al., 1993). An example of an organisational stressor is not having enough time to complete jobs (Hart et al., 1993). Both types of stressors have shown to negatively impact first responders (Hart et al., 1993). Of the first responders, ambulance personnel are recognised as having one of the highest rates of psychological distress (Lawn et al., 2020). This psychological distress is most frequently measured by posttraumatic stress symptoms (PTSS) and depression (Wagner et al., 2020). The most recently reported rates of psychological distress among ambulance personnel found PTSS to range from 0 – 60%, and depression from 6.4 – 42.9% (Wagner et al., 2020). These rates were considerably higher than the previous systematic review of common mental disorders among ambulance personnel, which reported rates of 11% for PTSS, 15% for depression and 27% for general psychological distress (Petrie et al., 2018). It has thus been suggested that psychological distress is increasing among ambulance personnel (Lawn et al., 2020). Ambulance

personnel are an essential part of our communities and protecting their wellbeing should be a priority (Lawn et al., 2020).

An effective factor for first responders in relation to their work environments and to protect against this psychological distress is social support (Able & Arnetz, 2017; Guilaran et al., 2020; Prati et al., 2009; Prati & Peitrantoni, 2010a). Social support is most broadly defined as "resources provided by other persons" (Cohen & Syme, 1985, p. 4). Social support can be measured in multiple ways, and for this research, social support is separated into perceived support and received support. These constructs are frequently used with first responders and provide important information about how individuals are supported and by whom.

First responders

First responders are the first wave of a response to an emergency, accident, or disaster, and are responsible for the protection and preservation of life, property and the environment (Prati & Pietrantoni, 2010a). This is the operational definition used for first responders in this thesis. First responders usually include police, firefighters, emergency and paramedical teams and search and rescue personnel (Prati & Pietrantoni, 2010a). The work environment of first responders consists of a broad range of stressors, including the increased rate of exposure to traumatic events, compared to the general population (Geronazzo-Alman et al., 2017). This harmful work environment also includes emotional burden, stress and burnout (Betleham et al., 2014), which increases first responders' risk of developing a multitude of mental and physical health consequences as a result of their work environment (Benedek et al., 2007; Prati & Pietrantoni, 2010a).

Although police, firefighters and ambulance personnel share many similarities in their work environment, it is also recognised that these occupational contexts vary, and that each type has their unique role (Lawn et al., 2020). Thus, research should be inclusive of all

types of first responder samples. However, this is not the case, as the majority of first responder research mainly focuses on police with ambulance personnel largely overlooked (Haugen et al., 2012; Alden et al., 2020). Internationally, there is limited research with ambulance personnel as the target sample, which has resulted in the inclusion of first responder literature more generally throughout this thesis. This limited research with ambulance personnel is also reflected in the national context. There has been substantial mental health research completed with the New Zealand Police (see de Terte et al., 2014; Huddleston et al., 2007; Stephens & Miller, 1998); however, there is very little research with New Zealand ambulance personnel regarding mental health and social support. To date, the only published research which includes New Zealand ambulance personnel are studies which focus on first responders more generally and investigate work-related psychological wellbeing and traumatic and organisational stressors (Brough, 2004; 2005).

Ambulance personnel

Ambulance personnel is a broad term encompassing all those who work within an ambulance service. In this research, the sample of ambulance personnel from Wellington Free Ambulance includes paramedics, patient transfer officers, communications staff, head office staff and event or volunteer staff. Within the literature, the most commonly researched ambulance role is paramedic. In New Zealand, paramedics are defined as those who "assess and treat people who are seriously ill or injured and transport to hospital if necessary" (New Zealand Government, 2020). Although the majority of ambulance personnel employed by Wellington Free Ambulance are paramedics, this research has broadly focused on all roles within this ambulance service, and thus the term ambulance personnel has been used to describe this sample. All ambulance personnel were included in this research, as although paramedics are recognised as the forgotten population within first responder research, there is significantly less research specifically for roles within

ambulance services other than paramedics (e.g., Adams et al., 2015; Gallagher & McGilloway, 2008; Shakespeare-Finch et al., 2015). Of this limited research, Adams et al., (2015) reported similar experiences between emergency medical dispatchers and paramedics. Furthermore, just under half of participants in this study identified with job roles other than paramedics, and it was considered important to capture their experiences as well.

Ambulance personnel have been reported to have one of the most stressful jobs, scoring below average on physical health, psychological well-being, and job satisfaction (Johnson et al., 2005). This high level of stress may be a result of the high "emotional labour" experienced by ambulance personnel (Johnson et al., 2005, p. 178). Johnson et al. defined emotional labour as an element of work in which employees have face to face or voice to voice interaction with clients, where they are required to display emotions in line with strict rules. For example, a frequently occurring emotional labour task for ambulance personnel is for personnel to remain calm in dangerous and volatile situations.

Although all first responders experience tasks with high emotional labour, ambulance personnel have been found to have worse health outcomes, including PTSD and general psychological distress, compared to police officers and firefighters (Berger et al., 2012; Petrie et al., 2018). Compared to other first responders, ambulance personnel respond to more emergency calls, have greater work pressures and stress and have closer contact with patients (Berger et al., 2012). It is thought that these stressors may be large contributors to the higher presence of PTSS compared to other first responders (Berger et al., 2012).

Occupational context

The occupational context of first responders is significantly different to other work environments (Donnelly & Siebert, 2009). One of the important differences which set first

responders apart from any other job is the increased exposure to traumatic events. Traumatic events are defined by the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as “exposure to actual or threatened death, serious injury, or sexual violence” (APA, 2013). This exposure to traumatic events is considered an operational stressor for first responders and ambulance personnel, as it is an experience which stems from tasks that only those in these roles would experience, and therefore sets first responders apart from other occupations (Hart et al., 1993). In addition to operational stressors, another type of work-related stressor is organisational stressors. Organisational stressors are more commonly shared across occupations and are defined as the harmful or threatening experiences which stem from the daily routines of ambulance personnel (Hart et al., 1993). Organisational stressors are recognised as oppressive, uncontrollable and unnecessary and examples of these include interpersonal conflict, communication and time pressures (Purba & Demou, 2019). Both types of stressors have been found to have a significant impact on ambulance personnel’s mental health (Donnelly, 2012).

Psychological distress

One of the results of increased work-related stressors for ambulance personnel is the experience of psychological distress. Psychological distress is considered a vague concept with no agreed upon definition, although is often described as a non-specific mental health problem (Drapeau et al., 2012). Psychological distress is also frequently used as a broad term to describe a “state of emotional suffering” (Arvidsdotter et al., 2015, p. 687), entailing the experience of symptoms including functional disabilities, behavioural problems, somatic symptoms and symptoms of depression and generalised anxiety (Drapeau et al., 2012). Psychological distress also describes the continuum of severity of symptoms, ranging from mildly symptomatic to severe psychiatric disorders (Goldberg & Blackwell, 1970). PTSS

and depression are two of the most frequently researched types of psychological distress for ambulance personnel (Jones, 2017), and are the two constructs used in this thesis.

PTSS

PTSS are the symptoms listed in the DSM-5 (APA, 2013) disorder posttraumatic stress disorder (PTSD). PTSD is as a "trauma- and stressor-related disorder" and can occur following exposure to a traumatic event. It is characterized by four types of symptoms; intrusion symptoms (e.g., distressing memories and dreams), avoidance (e.g., avoidance of external reminders), negative alterations in cognition and mood (e.g., negative beliefs, blaming oneself, persistent negative emotional state) and marked alterations in arousal and reactivity (e.g., irritable behaviour, exaggerated startle response, sleep disturbance; APA, 2013). Of interest for this research is the presence of these symptoms. PTSS is used rather than the term PTSD, first and foremost as a way of reducing stigma in this population of first responders, as it explicitly recognises that people experiencing PTSS are not disordered. Second, the use of PTSS reflects the significant symptoms individuals experience following a traumatic event, while also reflecting the normality of these symptoms, as PTSS is considered a natural consequence of exposure to a traumatic event (Straud et al., 2018). Third, PTSS is used because a diagnosis of PTSD cannot be made based only on a self-report symptom checklist, and also because the presence of PTSS does not necessarily equate to impaired functioning, as shown by Regehr and LeBlanc (2017). Fourth, PTSS is identified as an outcome in the occupational mental health model framework for high-risk occupations, to recognise the normality of this for high-risk occupations (Adler & Castro, 2012). Influenced by these important factors, PTSS is used in this research to identify trauma symptoms experienced by ambulance personnel.

Depression

Another consequence of work-related trauma is depression. The DSM-5 (APA, 2013) definition of depression is used for this research. The DSM-5 states that a depressive episode consists of at least five symptoms over a two-week period. Symptoms include: depressed mood; markedly diminished interest or pleasure in all or almost all activities; significant weight loss or gain or changes in appetite; insomnia or hypersomnia; psychomotor agitation or retardation; fatigue or loss of energy; feelings of worthlessness or excessive or inappropriate guilt; diminished ability to think or concentrate, or indecisiveness; recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide. These symptoms must be present for most of the day, nearly every day, and represent a change from previous functioning. At least one of the symptoms must be either depressed mood or loss of interest or pleasure. The DSM-5 construct of depression is used in this research, with a focus on depressive symptoms.

Social support

Multiple definitions of social support have been presented in the literature (Barrera & Ainsley, 1983), and perhaps the broadest of these defined social support as "the resources provided by other persons" (Cohen & Syme, 1985, p. 4) or the "functions performed for the individual by significant others (Thoits, 2011, p. 146).

It is this general definition of social support that will be used for this research. In developing this broad definition, Barrera (1986) separated social support into three categories: perceived support, received support, and social embeddedness. Perceived support is the most researched and referred to type of social support in the literature (Wills & Shinar, 2000). It is defined as the cognitive appraisal of being reliably connected to others (Barrera, 1986) and as supportive functions which are perceived to be available if needed (Wills & Shinar, 2000). Both definitions include the subjective perception of the

experience of social support, which is the key difference between perceived and received support. Perceived and received support are recognised as being separate forms of social support and are not considered interchangeable, implying that each measures a distinct concept (Haber et al., 2007; Uchino, 2009; Wills & Shinar, 2000). An example of perceived support is believing that one's family are available to talk to about problems if necessary (Zimet et al., 1988). Received support, on the other hand, is defined as the behavioural transactions provided by natural support systems (Barrera & Ainlay, 1983), or more specifically, supportive functions that are recently provided (Wills & Shinar, 2000). An example of received support is receiving information on how to do something (Barrera & Baca, 1990). Finally, social embeddedness concerns the connections individuals have to significant others in their social environment (Barerra, 1986). An example of a connection individuals may have is the presence of a spouse or marital partner (Barrera, 1986). Social embeddedness is usually measured through a network analysis, which House and Kahn (1985) recommend should be used selectively, as these have not shown to increase understanding of social support's impact on psychological distress (Barrera, 1986). Thus, social embeddedness will not be a focus of this research.

In addition to Barrera's (1986) original categorization of support, another important consideration concerns the source of this support. Sources of support may vary; however, two important broad categories of social support providers include: significant others and similar others (Thoits, 2011). These two groups are reportedly the most specialized at providing support to distressed individuals (Thoits, 2011). In terms of significant others, the marital relationship has been the most studied social relationship and one that most consistently relates to health (House & Kahn, 1985). Family and friends are also a frequently studied source of support (Zimet et al., 1988), and in terms of work supports,

supervisors and colleagues are also recognised as being important sources of support (Caplan et al., 1975; Halpern et al., 2009).

Thus, social support is a broad concept with many different definitions and also refers to many different types of social support. For this research, social support is considered to be resources provided by others; perceived support is defined as the cognitive appraisal of being reliably connected to others; received support is defined as behavioural transactions provided by others; and sources of support concerns the provision of support from different types of people. These constructs will be measured in this thesis because they are considered to be relevant and informative measures of social support. Additionally, each measure provides a different perspective of social support, which when taken together, can increase our understanding of social support for New Zealand ambulance personnel.

Models of social support

There are two main models proposed to explain how social support influences mental and physical health: the stress-buffering model and the main effects model. The stress-buffering model proposes that support impacts wellbeing only for individuals who are currently experiencing stress. This model suggests that high levels of social support protect individuals from stress-induced pathology, and support is relatively unimportant at low levels of stress (Cohen & Hoberman, 1983). It is thought that social support operates by preventing responses to stressful events that are harmful to health (Cohen et al., 1983). This contrasts with the main effect model, which proposes that social resources have a beneficial effect regardless of whether the individual is experiencing stress or not, and social support enhances wellbeing irrespective of how much stress is present (Cohen & Syme, 1985). The main effect model proposes that those who are part of social networks are influenced by social controls and peer pressure which influence normative health behaviours. Being part of these networks is also thought to provide a source of generalised positive affect; sense of

belonging and security; and recognition of self-worth, which then results in greater motivation to care for oneself, enhances immune function and reduces "psychological despair" (Cohen et al., 1983, p. 11). The main effect model suggests that social support contributes positively to health regardless of stress exposure, where it has a direct effect on health (Cohen et al., 1983).

As these two models propose different pathways of impacting health, there have been multiple debates over which model is correct, based on plentiful evidence for both. As a result of these arguments, Cohen and Syme (1985) reported that it is more important to examine specific hypotheses about how social support relates to health overall, rather than focus on which model is correct, as both have shown to be accurate in different contexts (Cohen & Syme, 1985).

Social support and mental health

Regardless of which social support model is thought to be correct, Cohen et al. (1983) reported that social support affects mental health by maintaining regulation of emotions, cognitions and behaviours, which prevents extreme dysfunctional responses. Perceived support availability is considered to be a mechanism linking social support to mental health and fits with both the main effect and stress-buffering models (Thoits, 2011). Thoits discussed how perceived support has a positive effect on health in two situations; both in everyday, routine situations (stress buffering model), as well as when major stressors are experienced (main effect). Cohen et al. (2000) has suggested that perceived support prevents negative responses, and results in an alternative way to view a situation, where situations are appraised as less stressful due to the perception of support.

While there is evidence for how perceived support may influence positive health outcomes, less is known for how received support influences positive health. This is even when logically it is recognised that perceptions of support or perceived support availability,

should result from actual support enacted or received, and thus it is expected that perceived and received support are closely linked (Thoits, 2011). However, this however is not the case, as multiple studies have shown perceived and received support to relate weakly to one another (Uchino, 2009; Prati & Pietrantoni, 2010a; Thoits, 2011). The effects of received support on health, which are often variable (Uchino, 2009; Melrose et al., 2015), may be explained by the way in which recipients respond to this support. Recipients may not appreciate unsolicited help, and this is oftentimes especially the case when recipients feel indebted, overrewarded, overly dependent or incompetent (Thoits, 2011).

Both types of support have been frequently researched, as social support and mental health have a long-standing relationship. Research shows that positive social support can enhance resilience to stress (Ozbay et al., 2007), help protect against developing trauma-related psychopathology (Brewin et al., 2000) and depression (Choi et al., 2020), and mitigate perceived stressors and moderate the stress-strain relationship in the workplace (Viswesvaran et al., 1999). The lack of social support, or social isolation, is also frequently implicated in poor mental health statistics. Wang et al. (2018) argued in a systematic review that increased loneliness or the lack of perceived social support have shown to result in worse recovery outcomes, poorer social functioning, and depression. Perceived social isolation has also been found to accelerate cognitive decline, impair immunity (Hawkley & Capitanio, 2015), and increase the risk of premature death across the lifespan (Alcaraz et al., 2019). Thus, social support is deemed to have an important role to play in the mental health of individuals.

Social support and first responders

Due to the broad positive impact social support has on mental health, social support is a frequently researched variable in first responder research (Guilaran et al., 2018; Prati & Pietrantoni, 2010a). In fact, Arble and Arnetz (2017) have even developed a specific first

responder model of coping in regard to social support. This model posits that there are multiple pathways for first responders to increase their wellbeing in the face of work stress, and that social support fits well into both the avoidance and approach pathways. Thus, social support is deemed an effective coping strategy for first responders (Arble & Arnetz, 2017). Social support can be an approach strategy, for instance when first responders discuss problems with their friends, or it can be an avoidance strategy, for instance when they are out socialising with friends with the intention of forgetting about work issues (Arble & Arnetz, 2017). Both strategies are considered effective ways of coping for first responders.

As social support is considered an effective coping strategy for first responders, social support has been a frequently researched variable of interest. Social support has shown to be significantly related to first responders' mental health in a meta-analytic review, with an overall weighted medium mean effect size (Prati & Pietrantoni, 2010a). Similarly, a recent review of social support in disaster responders also found social support to have an impact on anxiety, burnout, depression and psychological distress (Guiliarian et al., 2018). However, these effect sizes were only small to medium, suggesting a large amount of variance in these outcomes cannot be explained by social support (Guiliarian et al., 2018). Although social support may not explain all the variance in psychological distress, a systematic review of psychological distress in disaster responders found that social support and appropriate training can mitigate the multiple risk factors of poor wellbeing for disaster responders (Brooks et al., 2016). Thus, social support has been recognised as one of the most critical factors influencing mental health among first responders (Kaniasty & Norris, 2008; Kshtriya et al., 2020).

Summary

Ambulance personnel are the least researched type of first responder; however, they have been found to operate in one of the most stressful job contexts (Johnson et al., 2005). It is important to further research related to ambulance personnel, as they are an important part of the emergency response system. Ambulance personnel's work context puts them at risk for developing psychological distress, particularly PTSS and/or depression. A well-known protective factor against this distress is social support, which has previously shown to be helpful for first responders. This thesis focuses on ambulance personnel and the impact of social support on psychological distress in the context of work-related stressors, for ambulance personnel. Risk factors in developing psychological distress are also explored.

Chapter Three:

A review of the literature: The impact of social support on psychological distress for ambulance personnel in the face of traumatic exposure and work-related stress

This chapter is in the form of a manuscript, which is to be submitted to an academic journal. It provides a review of social support for ambulance personnel. It is presented as the first manuscript in this thesis to provide readers with a summary of the literature and a solid foundation of what is known about social support for ambulance personnel.

Abstract

Research shows that work-related stress can lead to psychological distress for first responders. Within the first responder group, ambulance personnel, firefighters and police each have their own unique roles, which makes it vital to conduct research with all first responders. Ambulance personnel are routinely exposed to work-related stress which frequently leads to psychological distress. An important coping strategy found to moderate this relationship is social support. Thus, this review focussed on social support in ambulance personnel. Twenty-five articles were included in the review, and three main findings emerged: the benefits of perceived social support for the health of paramedics; the different sources of received support paramedics utilised; and barriers to accessing social support. Perceived social support reduced the experience of psychological distress and increased overall health for paramedics. Support can be received from many different sources, including both work (supervisors, colleagues and formal supports) and non-work sources (spouse, family and friends), with varying levels of accessibility and supportiveness. Barriers to accessing this support were also identified. Limitations to the current literature and review are considered, as well as areas of further research, including the need to investigate psychological phenomena other than posttraumatic stress symptoms, and the need for longitudinal research.

Overview

First responders are considered to be individuals who, in the early stages of an accident or disaster, are responsible for the protection and preservation of life, property and the environment (Prati & Peitrantoni, 2010a). Police, firefighters, ambulance personnel and search and rescue personnel are examples of occupations considered to be first responders (Prati & Peitrantoni, 2010a). All first responders work in inherently stressful work environments (Evans et al., 2013), where they are exposed to traumatic events, such as suicides and motor vehicle accidents (Alexander & Klein, 2001), and work-related stress, including operational factors like the risk of being injured, or organisational factors such as conflict with supervisors (Donnelly et al., 2016). A potential consequence of working in this occupational context is psychological distress, such as depression and posttraumatic stress symptoms (PTSS). PTSS is used throughout this review as a scoping term to include both symptoms of posttraumatic stress, as well as the clinical disorder, posttraumatic stress disorder (PTSD). Within the first responder literature, there is an increasing awareness and acknowledgement of the presence of both partial and full-blown manifestation of the PTSD criteria (Carmassi et al., 2016; Clohessy & Ehlers, 1999). The experience of isolated symptoms and subthreshold symptoms may precede, accompany or follow the occurrence of the main clinical disorder (Carmassi et al., 2016), and the use of the term PTSS reflects the significance of these symptoms.

An important coping strategy often used to manage psychological distress is social support. Social support has been found to be protective in the development of PTSS for trauma-exposed individuals (Brewin et al., 2000) and is recognised as the most protective factor against depression (Choi et al., 2020). Social support has also been recognised as an important coping strategy in the face of work-related stressors (Viswesvaran et al., 1999), and for first responders exposed to traumatic events and work-related stress (Prati &

Pietrantoni, 2010a). This review will outline the presence and impact social support can have on ambulance personnel, in the face of traumatic exposure and work-related stress, and how this impacts psychological distress.

Ambulance personnel is a broad term encompassing all those who work within an ambulance service. Ambulance personnel operate in a stressful work environment, which is made up of operational and organisational stressors. Operational stressors are stressors considered specific to each organisational context (Hart et al., 1993). A type of operational stressor for ambulance personnel is exposure to traumatic events. Traumatic events are defined by the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, (DSM-5; American Psychiatric Association [APA], 2013) as "exposure to actual or threatened death, serious injury, or sexual violence". A specific type of traumatic event for first responders is a critical incident, which is defined as an incident which is "sufficiently disturbing to overwhelm the individual's usual method of coping" (Alexander & Klein, 2001, p.76). Paramedics experience critical incidents and traumatic events at a higher rate than the general population (Geronazzo-Alman et al., 2017). Critical incidents significantly impact emergency personnel's mental health (Adams et al., 2015), and have been shown to predict trauma symptoms and psychological strain in first responders in New Zealand (Brough, 2004). Organisational stressors on the other hand, are defined as daily hassles which are similar across organisations and can be experienced in any work setting (Hart et al., 1993). Organisational stressors include factors such as communication issues and workload. Like operational stressors, organisational stressors have also been found to impact severity of PTSS, anxiety and depression for emergency ambulance personnel (Bennett et al., 2005). Thus, both types of work-related stressors appear to contribute to psychological distress for ambulance personnel, with both stressors identified as significant

risk factors in the development of PTSS, depression and suicidal ideation for first responders (Jones, 2017).

As work-related stressors have a significant impact on first responders' mental health, it is important to explore psychological distress specifically for ambulance personnel. A systematic review describing the health profiles of firefighters and ambulance workers reported PTSS as the most frequently investigated mental health disorder, with prevalence rates for paramedics ranging from 5.6% to 22% (Jones, 2017). Another systematic review and meta-analysis (Petrie et al., 2018) focused specifically on ambulance personnel, demonstrated a PTSD pooled prevalence rate of 11%. Petrie et al. also identified high rates of depression and anxiety, with an estimated pooled prevalence of 15% for each condition. Wagner et al. (2020) completed the most recent review of mental health symptoms in ambulance personnel and reported rates ranging from 0 to 60% for PTSS, and 6.4% to 42.9% for depression. These prevalence rates are elevated compared to the normal global population, with estimates of PTSS at 3.9-5.6% (Koenen et al., 2017), and 4.4% for depression (World Health Organisation, 2017). In addition to PTSS, depression and anxiety, other health variables also frequently investigated include general psychopathology, burnout, sleep, and substance use (Jones, 2017), however prevalence data was not available for these. These reviews demonstrate that compared to the normal population, ambulance personnel experience elevated psychological distress, specifically PTSS and depression.

With the high rate of psychological distress, it is important for ambulance personnel to have effective coping strategies to help protect against the negative effects of work-related stress. One of the most researched and effective coping strategies in protecting against the negative effects of traumatic exposure and stress is social support (Stanley et al., 2016). Social support is broadly defined as resources provided by others (Cohen & Syme, 1985). These resources are frequently measured in terms of perceived support and received

support, with considerations given to the type of support and who provides this, the length of support and when it is provided (Cohen & Syme, 1985). Perceived support is defined as the cognitive appraisal of being reliably connected to others, and received support as the actions that others perform (Barrera, 1986). Sources of support is an important consideration particularly for first responders, as work supports are often found to be particularly helpful in protecting against work-related stress (Halpern et al., 2012). Sources of support usually include work related supports such as colleagues and supervisors, with additional formal supports of psychologists and counsellors, and non-work supports include spouse/family, friends and community groups.

Social support has shown to be particularly useful for protecting wellbeing and mental health (Choi et al., 2020; Thoits, 2010; Viswesvaran et al., 1999). In first responder populations, a meta-analytic review of social support and mental health showed that social support was significantly related to mental health, with an overall weighted moderate effect size of r = .27 (Prati & Pietrantoni, 2010a). Prati and Pietrantoni reported that although social support was a clear resilience factor following the exposure to traumatic events, the mechanisms by which social support is related to adaptation are not clear. The authors speculated that social support may influence first responder's interpretation of the event and therefore his or her attribution patterns, as well as supportive others may influence first responders' emotional states and also help to identify more adaptive coping strategies (Prati & Pietrantoni, 2010a). Although the way in which social support influences mental health is unclear, it is clear that social support is a protective factor for first responders' wellbeing.

This review will focus specifically on ambulance personnel, as there is evidence for the usefulness of social support with first responders as a group (Prati & Pietranto, 2010a); police officers (Hart et al., 1993); and firefighters (Armstrong et al., 2014). However, there is no review of social support with ambulance personnel. Ambulance personnel frequently

experience poor physical and psychological health, with the majority of studies showing emergency work to be full of "stress, emotional burden and may easily lead to burn out" (Betleham et al., 2014, p. 395). Ambulance personnel are at risk of negative financial and social consequences interfering with family life (Regehr, 2005), reduced personal motivation and commitment to work (Jenner, 2007), and lifestyle diseases such as stroke, hypertension and depression (Mildenhall, 2012). The health of ambulance personnel is also a public service concern as high quality health care can only be provided by ambulance personnel who are both physically and mentally well (Betleham et al., 2014). Thus, this review will focus on the impact of perceived and received social support on ambulance personnel's wellbeing, specifically psychological distress outcomes, in the face of traumatic exposure and work-related stress.

Literature search strategies

Following Arksey and O'Malley's (2005) methodological framework for scoping studies, a specific research question was developed. This research question queried what is known from the existing literature about social support and how does it impact psychological distress and work-related stress for ambulance personnel? A wide approach to this question was maintained to begin with to generate breadth of coverage. The next step was to identify relevant studies through electronic databases and reference lists. PyschINFO, Scopus, Web of Science and CINAHL were used, with the following search terms: social support (and related concepts of perceived support, received support, instrumental support, emotional support and coping), and first responder (and the terms of emergency service, ambulance, ambulance personnel, ambulance paramedic). Searches took place over March 2018. Databases returned a combined total of 854 articles. Abstracts that indicated a "best fit" with the research question (Arksey & O'Malley, 2005, p. 26), namely those with a focus on social support with the target population of ambulance personnel were

further reviewed. Articles were included for review if they were; a) included in a peer reviewed journal, b) written in English, c) reported original data, d) specifically concerned with social support in ambulance personnel. Articles were excluded if they were, a) a review or meta-analysis article, and b) conducted research where the specific focus was not on social support. This process resulted in the review of 71 articles. Any study which included first responder groups as a whole (e.g., firefighters and police officers) in addition to ambulance personnel were excluded to specifically focus on ambulance personnel. However, one study was included in which the sample group was a combination of emergency medical service and emergency service and fire protection staff, as 83% of participants belonged to the emergency medical service. Emergency medical dispatchers and emergency medical communicators were included. Ambulance and emergency nurses were excluded as their job description varies across countries, and articles with a specific focus on one major disaster (for example; 9/11, natural disasters) were excluded as this was not the focus of this review. This process resulted in a total of 20 articles deemed suitable based on the research question. Reference lists from all included articles were evaluated using the same criteria, which resulted in a further three articles. The same process was completed in December 2020 to investigate if additional relevant articles had been published since the initial scoping process. Two additional studies were included. The total number of articles included for review was 25. Any articles specifically focusing on the impact of Coronavirus disease were also excluded, based on the same exclusion criteria of a focus on one major disaster.

See Figure 3.1 for a flow diagram following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRIMSA) guidelines (Moher et al., 2009). The Arksey and O'Malley framework also specify a fourth step, concerning charting the data,

and similar headings as those recommended were used for this review and are presented in Table 3.1.

Figure 3.1.
PRISMA flow diagram for process of articles to be included in study

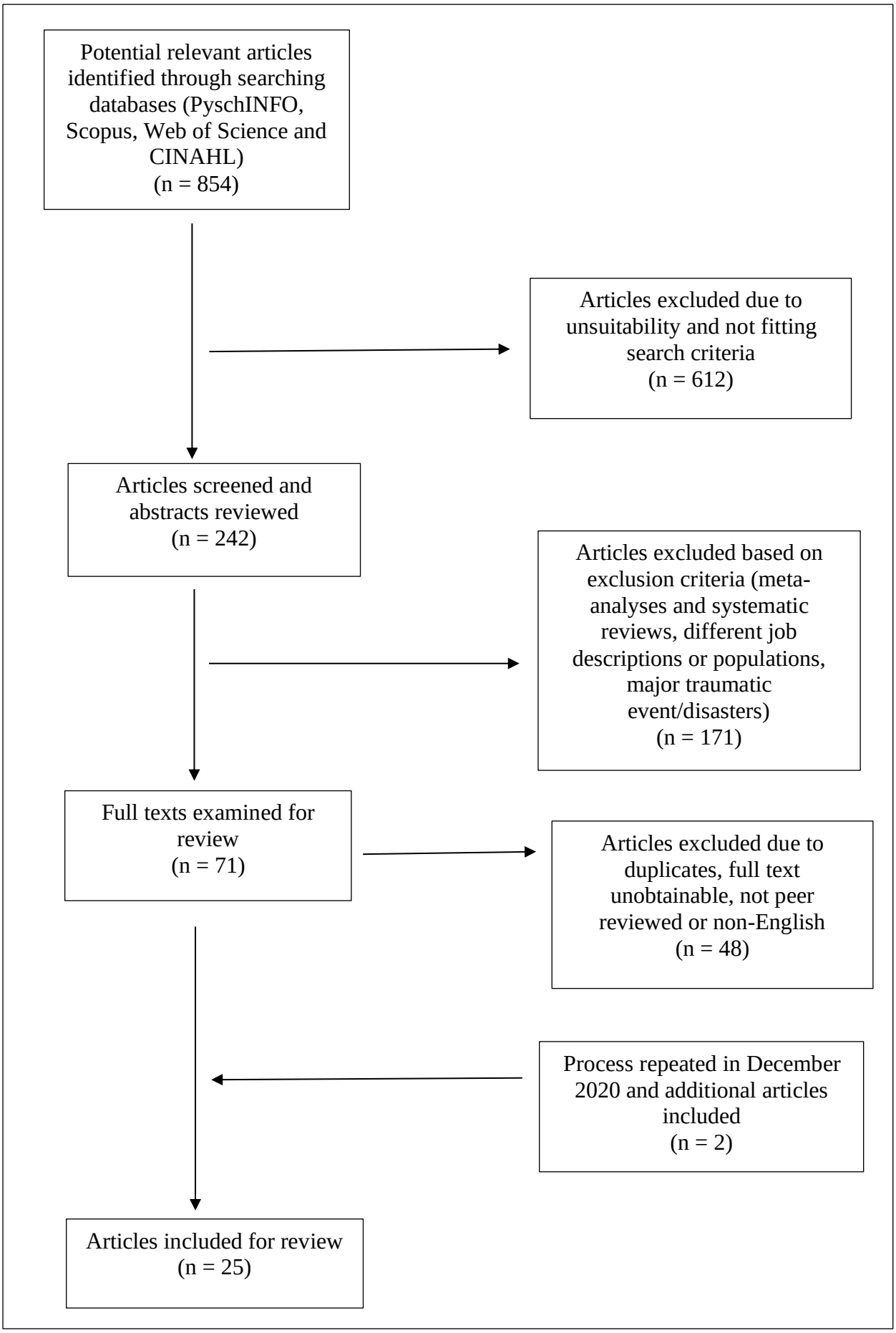

Table 3.1

Overview of the reviewed studies (n=25)

Author(s)	Participant group (n) and country	Aims/purpose of the study	Main findings	Type of social support and measure
Aasa et al. (2005)	Paramedics and EMTs (n = 1187) in Sweden	The relationship between work-related psychosocial factors, worry about work conditions and health complaints	High social support moderated stress at work.	Perceived support Demand-control support questionnaire (Karasek, 1979)
Alexander and Klein (2001)	Paramedics and ambulance technicians (n = 110) in Scotland	Prevalence of exposure to critical incident (CI), psychopathology and the relationship to personality	Peer support is more likely to be accessed than supervisor support Talking with colleagues is the most preferred coping method.	Perceived support Questionnaire developed by authors
Behnke et al. (2020)	EMS workers (n = 102) in Germany	Develop a checklist that allows quantifying cumulative exposure to stressful and critical events experienced in rescue missions	Trauma symptoms largely depended on lower perceived social support, with fewer symptoms present when EMS perceived more support from significant others.	Perceived support F-SozU K14 (Fydrich et al., 2019)
Brough (2005)	Paramedics (n = 119) in Australia	How the experience of violent incidents contributed to perceived social support, job satisfaction and psychological strain	Supervisor and colleague support directly predicted job satisfaction but not psychological strain. Workplace support directly predicted job satisfaction. Supervisor support was a strong predictor of job satisfaction Frequently occurring minor daily hassles have a similar, if not greater influence on outcomes, compared to less frequent major traumatic events.	Perceived support Social Support Scale (Caplan et al., 1975)

Author(s)	Participant group (n) and country	Aims/purpose of the study	Main findings	Type of social support and measure
Clohessy and Ehlers (1999)	Paramedics, ambulance technicians and trainee paramedics (n = 56) in England	The relationship of coping strategies and responses to intrusive memories with PTSS and other psychiatric symptoms.	Seeking social support was the second most utilised strategy (behind having a professional attitude) There was a high level of background stressors present, which may contribute to overall distress as well as PTSS.	Perceived support COPE Questionnaire (Carver et al., 1989) seeking support for emotional reasons subscale
Donnelly et al., (2016)	Paramedics (n = 145) in Canada	The relationship between work-related stressors and PTSS, and paramedics' preferred sources of support for managing work-related stress.	PTSS was significantly correlated with operational stress, organisational stress, and CI stress Paramedics reported a higher preference for receiving support from a work partner, friend, or family member, than from other sources CI stress combined with operational stress contributes to PTS risk (not CI alone).	Perceived support Questionnaire developed by authors
Gallagher and McGillowway (2009)	EMTs and emergency medical controllers (n = 27) in Ireland	The impact of CI on frontline staff.	There was low support service uptake due to fears relating to confidentiality and machismo A perceived lack of concern and support from management Interpersonal conflict at the stations was significant. The stress 'on the job' was easier to deal with than at the station	Received support Questionnaire developed by authors
Halpern et al., (2012)	Front line and supervisory ambulance workers (n = 189) in Canada	To investigate attachment styles and its relationship with coping and distress	High fearful avoidant attachment insecurity is characterized by a reluctance to access support in times of distress because of anticipated disappointment Fearful-avoidant attachment is associated with more severe burnout, PTSS, somatic and depressive symptoms, and fewer social contacts overall and fewer helpful contacts.	Received support Questions developed by authors

Author(s)	Participant group (n) and country	Aims/purpose of the study	Main findings	Type of social support and measure
Kirby et al., (2011)	Ambulance workers who experienced a traumatic event (n = 125) in Australia	The effectiveness of coping strategies in relation to posttrauma outcomes	Self-help coping, which includes attempts to seek support, was related to positive change in relationships with others and in regard to a sense of spirituality The type of coping strategy used influences the person's ability to recover from trauma.	Perceived support R-COPE (Zuckerman & Gagne, 2003)
Kohler et al., (2018)	EMS (83%, n=109) and emergency medical and fire protection service (n = 131) in Germany	The link between PTSS and perceived social support	More severe PTSS is associated with more dysfunctional attitudes in terms of disclosing traumatic experiences, and this is also related to lower levels of perceived social support.	Perceived support The Social Acknowledgement Questionnaire (Maercker & Muller, 2004)
Mishra et al., (2010)	EMTs and paramedics (n = 105) in Hawaii	Prevalence of PTSD, PTSS and commonly encountered traumatic incidents.	Seeking social support was the second most utilised coping strategy There were ethnic differences in seeking social support, where Japanese Americans and native Hawaiians used social support more than Caucasian individuals	Perceived support Coping methods were asked about
Moustou et al., (2010)	Ambulance workers (n = 347) in North Greece	The association between burnout and health behaviours	Ambulance personnel engaged in more frequent and higher consumption of substance use when they felt less supported from their social networks.	Received support Leiden Screening Questionnaire (van Elderen et al., 1988)
Pisarski et al., (2002)	Ambulance service workers (n = 60) in Australia	The relationships between social support, control over shift allocations, coping strategies, work/non-work conflict and psychological and physical symptoms	Supervisor support and co-worker support diminishes work/non-work conflict Those with high family support are protected from the effects of work/non-work conflict Social support reduces the inappropriate coping Co-worker support influences emotional wellbeing.	Perceived support Social Support Scale (Caplan et al., 1975)

Author(s)	Participant group (n) and country	Aims/purpose of the study	Main findings	Type of social support and measure
Pow et al., (2017)	Licensed paramedics (n = 87) in Canada	The relationship between global perceptions of support availability, work-related stress and sleep	Perceived support is important in facilitating high sleep quality Paramedics who perceived high levels of social support had sleep which was unaffected by work-related stress Paramedics who perceive low social support are at risk of poor sleep following days where they have high work-related stress.	Perceived support Interpersonal Support Evaluation List (Cohen et al., 1985)
Regehr et al., (2002)	Paramedics (n = 86) in Canada	The relationship between PTSS and the use of work leave	Those who had taken leave reported significantly lower overall support, with particularly low levels of family support, compared to those who had not taken leave One quarter of the sample took mental health stress leave following a CI Exposure to at least one CI was reported by 100% of the sample	Received support Social Provisions Scale (Cuttrona & Russell, 1987) Questionnaire developed by authors
Regehr et al., (2002)	Paramedics (n = 18) in Canada	The experiences of paramedics working with victims of violence	Talking to paramedics' support system was an important coping strategy Support from personal sources was significantly associated with both depression and PTSS The majority of paramedics indicated that they received little or no support from their employers or unions The majority of respondents indicated that their spouses/lovers were supportive or very supportive Peers were viewed by many as very supportive and helpful Exposure to at least one CI was reported by 100% of the sample.	Received support Social Provisions Scale (Cuttrona & Russell, 1987) Questionnaire developed by authors

Author(s)	Participant group (n) and country	Aims/purpose of the study	Main findings	Type of social support and measure
Regehr and Millar (2007)	Paramedics from an emergency service organisation in Toronto, Ontario, (n = 86) in Canada	Factors related to high levels of occupational stress	Supervisors were not a source of socioemotional support, in fact were considered a source of stress Formal support (psychologist) was helpful Social support was significantly negatively correlated with depression	Received support Social Provisions Scale (Cuttrona & Russell, 1987) Questionnaire developed by authors
Revicki and Gershon (1996)	Career EMTs (T1 n = 85; T2 n = 65) in America	The relationship between role clarity, work group support, supervisor behaviour, work-related stress and mental health	Social support resources modify the effect of stress on mental health and exert a direct, positive effect on psychological well being EMT who report supportive supervisors and who have cohesive work groups are less likely to report significant work-related stress Support at work was important in reducing work-related stress.	Perceived support Questionnaire developed by authors
Shakespeare-Finch and Daley (2017)	Ambulance officers (n = 740) in Australia	The significance of workplace belongingness in predicting psychological distress and resilience	Workplace belongingness acts as an interpersonal buffer between organisational stressors and wellbeing and is associated with decreased depressive symptoms and increased wellbeing Workplace belongingness is a negative predictor of distress and a positive predictor of resilience.	Perceived support Psychological Sense of Organisational Membership Scale (Cockshaw & Shochet, 2010)
Shakespeare-Finch et al., (2005)	Operational ambulance officers (n = 526) in Australia	The relationship between personality, coping variables and the levels of PTG	Personality variables influence the use of coping method, and those classed as extraverts may respond best to offers of social support as a coping strategy.	Perceived support Coping Responses in Rescue Workers Inventory (McCammon et al., 1988)

Author(s)	Participant group (n) and country	Aims/purpose of the study	Main findings	Type of social support and measure
Shakespeare-Finch et al., (2002)	Operational ambulance officers (n = 39) in Australia	The effect of workplace trauma on family functioning, as mediated by coping strategies	Social support correlates significantly with intimacy Ambulance officers had a more varied repertoire of coping strategies compared to a control group of shift-workers in other non-trauma exposed professions	Received support Personal Resources Questionnaire
Shakespeare-Finch et al., (2015)	EMD (n = 60) in Australia	The impact of giving and receiving social support on psychological wellbeing, PTSS and PTG	Giving social support was not a predictor of PTSS, PTG or wellbeing Receiving social support positively predicted wellbeing; negatively predicted PTSS; and positively predicted PTG.	Received support The 2-Way Social Support Scale (Shakespeare-Finch & Obst, 2011)
Soh et al., (2016)	Ambulance service staff (n = 490) in the United Kingdom	The predictors, dimensions and factor structure of wellbeing.	The level of organisational support experienced strongly and directly influenced level of affective wellbeing Ambulance personnel with high perceived organisational support are more engaged and satisfied with the organisation. Significant correlation between perceived social support and job satisfaction.	Perceived support Survey of Perceived Organisational Support – Short Form (Eisenberger et al., 1986)
Sterud et al., (2011)	Ambulance personnel (T1 n = 1180; T2 n = 298) in Norway	The importance of general job-related stressors, ambulance specific stressors and individual characteristics	Social aspects of work environment predict higher levels of psychological distress and emotional exhaustion. Lack of organisational support predicts higher levels of burnout and psychological distress at one year follow up.	Perceived support Job Stress Survey (Vagg & Spielberger, 1999)
van der Poleg and Kleber (2003)	Ambulance paramedics and drivers from the Netherlands (T1 n = 221; T2 n = 123) in Netherlands	The predictive effect of acute and chronic stressors on health symptoms	Lack of social support from colleagues and supervisor was associated with almost all health symptoms.	Perceived support Questionnaire on Experience of Assessment of Work (van Veldhoven et al., 1997)

Note. CI = critical incident; PTSS = posttraumatic stress symptoms; PTG = posttraumatic growth; EMD = emergency medical dispatcher; EMT = emergency medical technician; EMS = emergency medical service

Results

Traumatic exposure

Traumatic events were discussed in terms of the DSM-5 definition of "exposure to actual or threatened death, serious injury, or sexual violence" (APA, 2013; Mishra et al., 2010; van der Ploeg & Kleber, 2003), or by defining a critical incident (Alexander & Klein, 2001; Halpern et al., 2012; Kohler et al., 2018; Regehr et al., 2002b; Regehr & Millar, 2007). Critical incidents were defined as "acutely stressful incidents in their course of work" (Halpern et al., 2012, p. 51) and as "incidents which are sufficiently disturbing to overwhelm the individual's usual method of coping" (Alexander & Klein, 2001, p. 76). The remaining articles did not provide definitions for critical incidents. Rates of exposure to traumatic events or critical incidents were reported in seven studies, with the lowest reported by Mishra et al. (2010), with 71% of paramedics endorsing the experience of at least one traumatic event over their careers. This was similar to the 85% of paramedics in van der Ploeg and Kleber's (2003) study who had experienced a work-related traumatic event in the last five years. At higher rates of exposure, the remaining five studies reported 100% exposure to traumatic events (Halpern et al., 2012: Kohler et al., 2018; Regehr et al., 2002a; Regehr et al., 2002b; Regehr & Millar, 2007).

The cumulative nature of traumatic events was also reported, with the majority of paramedics in Halpern et al.'s (2012) study experiencing between one to five critical incidents over their careers, with most of these occurring within the last year. This was in contrast to Kohler et al. (2018), who reported the majority of paramedics endorsed exposure to more than four critical incidents, with 20% endorsing exposure to more than 10 critical incidents. In terms of the severity of events, over half of the paramedics in one study rated

their most traumatic work event to be “highly severe” or “extremely severe” (Shakespeare-Finch & Daley, 2017).

Many of the reviewed studies also investigated what paramedics identified as their most distressing event, and for the majority of studies, attending the death or serious injury of a child was regarded as the most distressing event (Alexander & Klein, 2001; Behnke et al., 2020; Clohessy & Ehlers, 1999; Gallagher & McGilloway, 2009; Halpern et al., 2012; Kirby et al., 2012; Mishra et al., 2010; Regehr et al., 2002b; van der Ploeg & Kleber, 2003). Other frequently listed critical incidents included treating friends and family; response to acutely ill or seriously injured people (Alexander & Klein, 2001); attending mass casualties (Halpern et al., 2012); attending suicidal incidents (Gallagher & McGilloway, 2002); direct threat to ambulance personnel’s own lives (Behnke et al., 2020); confrontation with people in despair and children of sexual abuse (van der Ploeg & Kleber, 2003). One study investigated what made an event traumatic and found that situations which elicit intense aversive emotions were often considered the most traumatic (Behnke et al., 2020). Overall, the majority of ambulance personnel have been exposed to at least one traumatic event or critical incident over their careers, with some studies reporting multiple exposure to these events. The most frequently reported distressing event was the death or serious injury of a child.

Work-related stress

In addition to exposure to traumatic events, ambulance personnel also experience other forms of work-related stress, including both organisational and operational stressors. Organisational factors, such as long hours and a large workload, were reported as a great source of distress for ambulance personnel (Regehr & Millar, 2007), resulting in a substantial negative impact on psychological health (Brough, 2005; Clohessy & Ehlers, 1999; Sterud et al., 2011), which significantly contributed to overall distress levels

(Gallagher & McGilloway, 2009). This relationship between organisational stressors and psychological distress is further evidenced by the fact that a large proportion of emergency workers were at risk of, and experienced traumatic symptoms, without even experiencing a traumatic event (Clohessy & Ehlers, 1999; van der Ploeg & Kleber, 2003). These studies stress the importance of organisational stressors influencing psychological outcomes for ambulance personnel.

Operational stressors were also recognised as influencing psychological distress for ambulance personnel. In Donnelly et al.'s (2016) study, operational stressors were significantly associated with health outcomes, and this was most strongly evident for PTSS. This is in contrast to Sterud et al., (2011), who found that although operational stressors were considered the most severe stressors, they were unrelated to any health problems one year later. Of the studies which investigated work environment, the most recent (Donnelly et al., 2016), reported that it was the combination of both organisational and operational stressors which contribute to the risk of developing PTSS. Similarly, paramedics in Mishra et al.'s (2010) study recognised the equal importance of work-related stressors and reported that operational and organisational factors both contribute to overall stress levels. Thus, it is recognised that ambulance personnel's work environment has an important influence on psychological distress for ambulance personnel.

Psychological distress

In the reviewed studies, the most commonly investigated type of psychological distress was PTSS. Eleven studies used established scales to measure PTSS, including versions of the Impact of Event Scale (Horowitz et al., 1979), the Posttraumatic Stress Symptom Scale (Foa et al., 1993) and the Posttraumatic Stress Disorder Checklist (Weathers et al., 2013). Of these, only five studies reported rates of PTSS, varying from 4% (Mishra et al., 2010), 16.8% (Kohler et al., 2018); 21% (Clohessy & Ehlers, 1999); 22% (van der Ploeg & Kleber, 2003), and the highest reported rate of 40% possible PTSS (Alexander & Klein, 2001). Severity of PTSS was reported in two studies, with approximately 40% of paramedics reporting low severity (Alexander & Klein, 2001; Regehr et al., 2002b); 14% (Regehr et al., 2002b) to 30% (Alexander & Klein, 2001) with moderate severity and 26% (Regehr et al., 2002b) to 30% (Alexander & Klein, 2001) with high severity.

The second most frequently investigated type of psychological distress was depression, which was measured in five studies by two established Depression scales, including versions of the Beck Depression Inventory (BDI, Beck & Beamesdefer, 1974; BDI-II, Beck et al., 1993), and the Centre for Epidemiological Studies Depression Scale (Andresen et al., 1994). Of these, only Regehr and Millar (2007) reported rates of depression, with 21% of paramedics endorsing mild to severe levels of depressive symptoms and the remaining 78% reporting mild or no depressive symptoms. General psychopathology was also reported, based on the Kessler 10 (K10) and the General Health Questionnaire (GHQ) screening. Seventeen percent of ambulance personnel reported overall distress rates of high or very high on the K10 (Shakespeare-Finch & Daly, 2017), and 22% (Clohessy & Ehlers, 1999); and 33% (Alexander & Klein, 2001) of paramedics reported high or very high scores on the GHQ. Of the 17% of ambulance personnel reported

to have high or very high psychological distress scores in Shakespeare-Finch and Daley's (2017) study, 7.4% were likely to have a severe mental health disorder. In Clohessy and Ehlers' study, the GHQ subscale which ambulance personnel scored highest on was the social dysfunction subscale, indicating low social interrelation. Other health issues reported for ambulance personnel as a result of the work environment include: sleeping problems (Aasa et al., 2005; Gallagher & McGilloway, 2009); angry outbursts following exposure to a traumatic event (Gallagher & McGilloway, 2009); headache and stomach symptoms (Aasa et al., 2005) and increased alcohol use (Moustou et al., 2010).

Social support

Perceived social support

Perceived social support had many benefits for ambulance personnel in the reviewed studies, although it was not specifically defined in any of these. Perceived social support reduced stress and protected against distress (Clohessy & Ehlers, 1999), protected against trauma symptoms (Behnke et al., 2020), facilitated high sleep quality (Pow et al., 2017), resulted in increased intimacy at home (Shakespeare-Finch et al., 2002), and increased the sense of being in control of shift work (Pisarski et al., 2002). Perceived workplace support also directly predicted job satisfaction for ambulance personnel (Brough, 2005; Soh et al., 2016), with the presence of perceived colleague and supervisor support resulting in fewer long-term health conditions for paramedics (van der Ploeg & Kleber, 2003). Specifically, following exposure to a traumatic event, perceived social support resulted in reduced depression (Regehr et al., 2002a), PTSS (Revicki & Gershon, 1996) and overall distress (Aasa et al., 2005). However, when there was an absence, or reduced levels of perceived social support, this was associated with lower sleep quality (Pow et al., 2017), a reluctance to disclose traumatic experiences (Kohler et al., 2018), and headaches, stomach complaints and sleep problems in male ambulance personnel, and headache complaints in female

ambulance personnel (Aasa et a., 2005). Ambulance personnel who felt less supported at work, engaged in more drinking at home (Moustou et al., 2010), and also took more sick leave (Regeher et al., 2002a). Reduced perceived work supports also impacted psychological wellbeing for paramedics, as a lack of perceived co-worker support predicted psychological distress, and a lack of perceived supervisor support resulted in emotional exhaustion and decreased job satisfaction (Sterud et al., 2011).

Received social support

Received support was frequently measured in the reviewed studies through investigation of which sources provided recent support. As a result, received support was provided from many different sources. In the reviewed studies, both work and non-work supports were investigated. Non-work supports include spouse/partner, family and friends, and work supports include colleagues, supervisors and forms of organisational support. Of the studies reviewed, paramedics frequently preferred the support of their peers, co-workers and work partners, and deemed this support to be “supportive” or “very supportive” (Regehr et al., 2002b; Regehr & Millar, 2007). Work partners were defined as someone with whom an individual regularly works with and were considered the most preferred source of support by 70% of paramedics (Donnelly et al., 2016). Coworkers were also a frequently sought source of support, with 50% of paramedics reporting they would seek help from coworkers (Donnelly et al., 2016). Colleagues and peers were also found to be the most preferred source of support for discussing critical incidents, with almost half claiming that it was “very helpful” (Alexander & Klein, 2001, p. 79). Peers were again considered helpful in Regehr et al.’s (2002b) study, with the benefits of peer support including sharing jokes and tales with each other. Paramedics felt a high degree of social and emotional integration with peers and viewed interactions with them as supportive and

trusting (Regehr & Millar, 2007). Peers and colleagues, particularly work partners, seem to be the most supportive and preferred source of work support for ambulance personnel.

The other major form of work support investigated was supervisor support. The importance of a supportive supervisor was consistently recognised as protective in reducing work-related stress and positively impacting psychological wellbeing (Halpern et al., 2012; Kohler et al., 2018; Regehr & Millar, 2007; Revicki & Gerhson, 1999). However, only three studies found supervisors to be supportive of ambulance personnel (Brough, 2005; Pisarski et al., 2002; Revicki & Gershon, 1999). For ambulance personnel working in a highly supportive environment, with low constraints, supervisor support was found to diminish work/non-work conflict and also reduced the health effects of shiftwork (Pisarski et al., 2002). Likewise, Brough (2005) found that when paramedics dealt with verbal violence, supervisor support was a significant moderator for psychological strain. In fact, supervisors were found to have a stronger influence on paramedics' wellbeing, compared to the experience of violence alone, as it was more important to have a supportive supervisor than an absence of any verbal violence (Brough, 2005). Finally, Emergency Medical Technicians (EMT) with open and supportive supervisors were less likely to report symptoms of depression, compared to EMT with more authoritarian supervisors (Revicki & Gershon, 1999). Thus, when supervisors are considered supportive, their impact on ambulance personnel's wellbeing is positive. However, in the remaining studies which investigated supervisor support, supervisors were generally deemed unsupportive (Donnelly et al., 2016; van der Ploeg & Kleber, 2003), and at worst, interactions with supervisors were considered hostile and a source of stress (Regehr & Millar, 2007). Supervisors were reported to be critical, blaming and uncaring and were not considered a source of socioemotional support (Regehr & Millar, 2007). Lack of supervisor support was associated with almost all health symptoms and was a significant predictor of burnout, post-trauma

response and fatigue (van der Ploeg & Kleber, 2003). In addition to being unsupportive, supervisors were also considered the least sought-after source of support for paramedics in Donnelly et al.'s (2016) study, with only 17% indicating they would seek help from supervisors if they were suffering from work-related stress. Although previous research has shown the importance of having a supportive supervisor for ambulance personnel, in the majority of reviewed studies, there was an absence of supportive supervisors.

Formal work supports were also identified, specifically peer support workers (Gallagher & McGilloway, 2009), counselling through Employee Assistance Program (EAP; Donnelly et al., 2016), psychologists (Regehr & Millar, 2007) and support from unions (Regehr et al., 2002b). Peer support workers are ambulance personnel who have had specific training in peer support and are available as a form of support, whose role includes providing short-term counselling and liaising with other peer support providers (Gallagher & McGilloway, 2009). Peer support workers were not rated highly by EMT's in Gallagher and McGilloway's study, and only two participants (2/27) had ever used peer support services. EAP counselling was identified as helpful in Donnelly et al.'s (2016) study, with 38% of paramedics indicating they would use this if they needed to. Several of the paramedics in Regehr and Millar's (2007) study reported that their organisation employed a clinical psychologist and found this to be helpful. A formal support that was considered unhelpful was unions, with 80% of paramedics in Regehr et al.'s (2002b) study reporting that their union was "not supportive." Finally, organisational support as a whole was also identified, with the majority of paramedics reporting low perceived organisational support, with 85% reporting a lack of concern from management (Gallagher & McGilloway, 2009), 35% reporting that their employer was "not at all supportive" and 23% reporting their employer was "a little supportive" (Regehr et al., 2002b, p.510).

Non-work supports were also investigated, and family members and friends were recognised as popular sources of support (Clohessy & Ehlers, 1999). More than 80% of ambulance workers in Donnelly et al.'s (2016) study reported that they were likely to seek help from their friends or family members. In another study, the majority of paramedics described the support received from spouse as "supportive" or "very supportive" (Regehr et al., 2002b).

Accessing social support

Social support was provided by many different sources, and paramedics viewed talking to these sources as an essential coping strategy (Regehr et al., 2002b). In fact, seeking support was found to be the second most utilized coping strategy in two studies (Clohessy & Ehlers, 1999; Mishra et al., 2010). The presence of social support has been found to reduce the use of inappropriate coping strategies for paramedics (Pisarski et al., 2002), and paramedics have identified both barriers to accessing social support and factors that encouraged them to seek it. The main barrier in seeking work supports was confidentiality (Alexander & Klein, 2001; Gallagher & McGilloway, 2009). Confidentiality was reported as a major barrier as paramedics did not believe others would keep their concerns confidential (Gallagher & McGilloway, 2009), and that this would harm future career prospects if they were perceived as being unable to cope (Alexander & Klein, 2001). In fact, paramedics in Gallagher and McGilloway's study reported that they would never confide in people at work, and that using outside professionals for support was considered necessary instead. This links with the "fear of discovery", which was also raised as deterring paramedics from seeking help (Gallagher & McGilloway, 2009). Additionally, the "macho atmosphere" (Regehr et al., 2002b) and machismo (Gallagher & McGilloway, 2009) were also noted as significant barriers to accessing work supports. This macho atmosphere, encouraging the display of masculine characteristics, is recognised as being at

odds with seeking help, especially as seeking help is reportedly perceived as a sign of weakness and therefore not masculine (Gallagher & McGilloway, 2009). This professional culture can also encourage the denial of emotionally demanding parts of the job while also stigmatizing emotional vulnerability, thereby reducing the likelihood of paramedics seeking support (Halpern et al., 2009). Another occupational deterrent to seeking help is the perceived lack of concern and support from management. This absence of a "climate of care" prevented some paramedics from seeking support from management, including support from direct supervisors and higher ranked officers (Gallagher & McGilloway, 2009, p. 219).

In addition to occupational factors, three studies investigated the influence of personal characteristics on support-seeking. Halpern et al. (2012) found that paramedics categorised as having a fearful-avoidant attachment style were unlikely to seek help when distressed. Likewise, paramedics who experienced more severe PTSS in Kohler et al.'s (2018) study were unlikely to seek help due to dysfunctional attitudes regarding disclosing traumatic events. On the other hand, paramedics who possessed the extravert trait, were more likely to seek social support and also respond well to social support (Shakespeare-Finch et al., 2005).

Discussion

Social support broadly refers to the support received from others, and research has repeatedly shown that people with spouses, family members, and friends who provide support have better health than those who receive less support (Lincoln, 2000). Social support is important for first responders, and has been reported to influence the experience of stress in three ways: directly reduce the level of work-related stress; enhance wellbeing; and constitute a buffer protecting against negative outcomes due to experiencing trauma (Oginska-Bulik, 2015). It is thus considered an important coping strategy for ambulance

personnel, and the results of this review suggested that it is beneficial for ambulance personnel, with similar findings to the first responder population as a whole. Perceived social support appears to result in job satisfaction, workplace belongingness, better sleep quality, less distress, and fewer long-term health conditions for ambulance personnel, and the absence of social support results in health complaints and harmful behaviours.

Social support can be received from many different sources, and the effectiveness of this support depends on the source providing it (Hoyt et al., 2010). Workplace supports have been the main focus in first responder research, due to the unique nature of these organisations (Varvel et al., 2007). Colleagues and peers, as well as formal organisational supports including therapists and psychologists, were considered valuable supports for ambulance personnel in this review. Supervisor support was frequently identified as the least supportive source and even considered a source of stress. This lack of support from supervisors contrasts with the established importance of supervisor support in high-stress occupations identified in previous research (e.g., Regehr et al., 2003). Moreover, Varvel et al. found that supervisors play a unique role in the level of stress experienced for firefighters, however, this did not appear to be the case for ambulance personnel in the reviewed studies. Non-work supports, including family, friends and partners were considered the most useful and accessible sources of support in the studies reviewed. Support from spouse, family and friends is significantly negatively correlated with scores on both trauma symptom and depressive symptom scales (Regehr et al., 2001; Regehr, 2005; Weiss et al., 1995). Spouses are regarded as a primary mediator of psychological distress in paramedics, and their support is considered paramount to reduce the impact of highly stressful work (Regehr, 2005). This is similar to first responders in Hoyt et al.'s (2010) study, who preferred the support of their spouses, friends and family members, preferring to disclose traumatic events to these sources of support.

Barriers of confidentiality concerns, the machismo environment and stigmatising emotional vulnerability and therefore support-seeking, deterred some paramedics from accessing support. The issue of confidentiality echoes similar findings in the larger first responder population, where confidentiality has been identified as a fundamental factor that influences whether emergency and human service workers seek social support (Lovesth & Aasland, 2010). Social support is considered essential in the process of dealing with trauma (Oginska-Bulik, 2015), and should be an accessible and utilised coping strategy for ambulance personnel. Thus, it is important that these barriers are recognised, and interventions aimed at reducing or removing these concerns is of upmost importance.

Limitations

There were some frequently reported limitations of the reviewed studies; one of which was the use of cross-sectional designs. Cross sectional studies are often described as providing a "snapshot", and are recommended for use to identify patterns, correlations and incidence rates of a subject of study within a population (Allen, 2017). The main disadvantage of cross-sectional designs is that they cannot support conclusions on causal relationships, due to their "snapshot" in time, and so only associations can be concluded from the results. Also, cross sectional studies cannot account for what happens before and after the data was collected, which means it is unknown if results would be different if a different point in time was investigated (Allen, 2017). This major weakness of cross-sectional design studies was acknowledged in many of the reviewed studies.

Within cross sectional design research, it is generally assumed that the population studied is heterogeneous in its characteristics, with representation of participants from different ages, with different opinions and behaviours. Thus, the goal of sampling is to "properly represent the diversity within this group" (Lewis-Beck et al., 2004, p.230). Only one study (Sterud et al., 2011) reported using the chi-square statistic to test if the sample matches the population, which suggests the remaining studies perhaps did not check that the sample data was a good fit for the population. Sufficiently large sample sizes and response rates are also important to ensure heterogeneity, and sample sizes were frequently noted as a limitation of many of the studies involved. Sample sizes were generally adequate, with quantitative studies varying from 56 (Clohessy & Ehlers, 1999) to 1187 (Aasa et al., 2005), and qualitative studies varying from 18 (Regehr et al., 2002) to 27 (Gallagher & McGilloway, 2009). Response rates were similarly varied, ranging from a low of 24% (Brough, 2005) to 79% (Aasa et al., 2005). Unfortunately, some studies did not report response rate, but were still included in this review.

Biases in research are common, and two main types were noted in the reviewed studies: self-selection bias and recall bias. The self-selection bias results in a sample that does not accurately represent the overall population (Lavrakus, 2008). This is relevant for the reviewed studies because it has been demonstrated that that those who do not participate in traumatic stress research have more health problems than those who do participate (van der Ploeg & Kleber, 2003). Thus, it is possible that non-participants may be experiencing increased traumatic stress and symptoms, and may also have a different experience of social support compared to those who participated in the research, and their opinions are not portrayed in these studies. Recall bias also influences results, and describes the possibility of errors in memory, when questioning participants about a past event (Donnelly et al., 2016). Although there is the possibility for retrospective distortion, in trauma research, self-report is the most frequently used method to measure the subjective nature of trauma and stress (Donnelly et al., 2016), and thus recall bias was a frequently identified limitation in many studies.

Finally, generalisability of findings may be limited for at least two reasons. Firstly, it has been suggested that emergency medical service workers are a "select group" who may possess higher levels of resilience and protective coping strategies, compared to the general population, (Kirby et al., 2011, p. 32). This "select group" could have implications for generalisability of results, where findings for first responders are not considered applicable to the wider population, due to the possibility of first responders possessing increased resilience and more coping strategies. Secondly, these studies only surveyed those who are currently employed. It is not known how many individuals have left the service as a result of psychological distress and maladaptive coping strategies (Bennett et al., 2005), which means there is likely an underestimation of psychological distress, especially because these

traumatised workers are likely to retire early (Berger et al., 2012). Thus, the findings from the reviewed studies are likely applicable only to current employees in ambulance services.

Future directions

A repeatedly identified limitation was the lack of longitudinal design research. More frequent use of longitudinal design studies would enable stronger causal conclusions to be drawn about the data, thus furthering the knowledge within the field. It would also be beneficial in future research to include individuals who have resigned or retired from ambulance services, as a way to reduce the possibility of participants differing from non-participants, as well as investigate if past-employees have more health problems and perhaps less social support, compared to current employees. Additionally, investigating other forms of psychological distress would be helpful in order to understand ambulance personnel's functioning more broadly, and to see the relationship between other types of psychological distress and social support. Finally, including research with a focus on protective factors is also likely to be beneficial, as first responders are generally recognised as being a resilient population (Scully, 2011; Shakespeare-Finch & Daley, 2017).

Limitations of this review

First, only journal articles that were published in English were considered for review. It is possible that articles published in languages other than English would have contributed to the findings and were not included. Likewise, other types of text, such as theses and books, were also excluded. While a number of databases were searched, it is possible that some articles were missed and as a result are not included in this review. Second, the specific inclusion criteria utilised for this review meant that only those studies with a specific focus on social support were included. Studies that had a broader focus on health or coping strategies, with no specific mention of social support were excluded from the review. The specific criteria was established to ensure that comparisons could be made

across the studies and that conclusions could be drawn, at the cost of limiting included studies. Third, the population reported in the reviewed studies were ambulance personnel (or similar terms). Ambulance/emergency nurses were not included in the review as they operate in different occupational contexts to ambulance personnel which is likely to specifically influence social support, as they may not work as closely with a work-partner, and have different available supports. However, because of the exclusion of emergency nurses, it is possible that other valuable knowledge was not included.

Conclusion

This review aimed to provide a review of the impact of social support on ambulance personnel. Three main findings emerged: the benefits of perceived social support; the multiple sources of received support for ambulance personnel; and barriers to accessing social support. Social support was regarded as a protective factor for the health and wellbeing of ambulance personnel who frequently faced traumatic events and work-related stress. Both perceived and received social support reduced the experience of psychological distress, and in fact increased paramedics' health in a multitude of ways, including improved relationships, job satisfaction, workplace belongingness, physical health and sleep quality. Sources of support varied, and colleagues and co-workers were reported as the most accessible and supportive work source for paramedics, whereas supervisors were not considered particularly supportive. Non-work supports were the preferred source of support for paramedics, particularly spouse, family and friends. Although social support is an important coping strategy, it was recognised that there are some barriers to accessing this, including confidentiality concerns and the machismo environment. Limitations reported in the literature include a lack of longitudinal research; biases in responses and sample; small sample sizes; and "select group" differences. These limitations represent areas of future research, in addition to the consideration of longitudinal design studies, the inclusion of past

employees in research and the investigation of protective factors and continued focus of psychological distress more broadly for ambulance personnel.

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STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

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Chapter Four:

Method

The current study

The review of the literature in Chapter Three clarifies the dearth of research with a specific focus on the impact of social support on ambulance personnel's health. This was in contrast to the ample research available for police officers (Hart et al., 1993) as well as for first responders as a whole group (Prati & Pietrantoni, 2010a). Results showed that perceived support, the most commonly measured type of support, resulted in multiple health benefits for ambulance personnel. Support was received from multiple sources, with a preference shown for support from spouse or partner. There were mixed findings about the availability of supervisory support (e.g., Brough, 2005; Pisarski et al., 2002) which is concerning, as support from supervisors has shown to have many benefits for ambulance personnel (Halpern et al., 2012; Regehr & Millar, 2007). Thus, the current study focuses on social support, in particular, perceived and received support.

Social support is a well-researched coping strategy used by first responders in the context of work-related stressors and traumatic exposure (Prati & Pietrantoni, 2010a). It is also considered as the most effective protective factor for depression (Choi et al., 2020). First responders are consistently recognised as working in a very different occupational context to most, with stressors specific to the first responder job (Donnelly & Bennett, 2014). In the review in Chapter 3, work-related stressors were found to contribute to psychological distress for ambulance personnel and are an important consideration of this research. The few studies that have investigated work-related stressors for New Zealand ambulance personnel suggested that work-related stressors are related to job satisfaction and psychological wellbeing (Brough, 2004; Brough, 2005). However, compared to organisational stressors, operational stressors demonstrated a stronger relationship to trauma

symptomatology and psychological strain (Brough, 2004). This relationship is not consistently found in the literature, and this research aims to provide more current information about the impact of work-related stressors on psychological distress for ambulance personnel.

In terms of psychological distress, the two most investigated mental health disorders for ambulance personnel are PTSS and depression (e.g., Jones, 2017), which are the focus of this research. These were selected because the literature shows elevated levels for ambulance personnel with significant effects on wellbeing. Additionally, the review showed a predominance of studies focused on PTSS, with a recommendation to also investigate other types of psychological distress. In selecting these forms of psychological distress, rates of distress for New Zealand ambulance personnel can be compared to international ambulance personnel, and the impact social support may have on these outcomes can be explored. It is expected that New Zealand ambulance services can use this information to implement interventions aimed at reducing distress and work-related stressors and increasing social support. These interventions would be based on the findings from this study. At present, this is not currently feasible given the lack of information about New Zealand ambulance services. Thus, this study will provide valuable information and add to the body of research evidence. The current research aims to investigate the relationship between social support and psychological distress for ambulance personnel in the face of traumatic exposure and work-related stress. This resulted in the following specific research questions:

1. What are the risk factors for psychological distress for ambulance personnel?
2. Is social support protective against psychological distress?
3. Does social support moderate the relationship between work-related stress and psychological distress?

4. What sources of support are perceived to be the most supportive?
5. Is there a difference between male and female ambulance personnel in terms of risk factors, psychological distress, and social support?

The first question is addressed in a single manuscript (Chapter Five), with the following three questions addressed in another manuscript (Chapter Six). The final question is addressed in both of the aforementioned manuscripts, and all questions are also discussed in the discussion chapter.

It is expected that the current research will offer an understanding of work-related stressors and the experience of social support for ambulance personnel and may provide possible interventions for protecting against psychological distress associated with work-related stressors.

Key variables

This section provides a definition of the key variables used in the current research.

Psychological distress

Psychological distress is a broad term used to describe a "state of emotional suffering" (Arvidsdotter et al., 2015, p. 687), which encompasses painful symptoms ranging from mild symptoms to severe psychiatric disorders (Goldberg & Blackwell, 1970). In this research, two major presentations are discussed as psychological distress: PTSS and depression.

PTSS

PTSS are the symptoms listed in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association: APA, 2013) disorder posttraumatic stress disorder (PTSD). PTSD is as a "trauma- and stressor-related disorder" and can occur following exposure to a traumatic event. It is characterized by four types of symptoms; intrusion symptoms (e.g., distressing memories and dreams),

avoidance, negative alterations in cognition and mood (e.g., negative beliefs, blaming oneself, persistent negative emotional state) and marked alterations in arousal and reactivity (e.g., irritable behaviour, exaggerated startle response, sleep disturbance; APA, 2013). Of interest for this research is the presence of these symptoms.

Depression

The DSM-5 (APA, 2013) definition of depression is used for this research. The DSM-5 states that a depressive episode consists of at least five symptoms over a two-week period. Symptoms include: depressed mood; markedly diminished interest or pleasure in all or almost all activities; significant weight loss or gain or changes in appetite; insomnia or hypersomnia; psychomotor agitation or retardation; fatigue or loss of energy; feelings of worthlessness or excessive or inappropriate guilt; diminished ability to think or concentrate, or indecisiveness; recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide. These symptoms must be present for most of the day, nearly every day, and represent a change from previous functioning. At least one of the symptoms must be either depressed mood or loss of interest or pleasure. The DSM-5 highlights the importance of "clinical judgement" in making a diagnosis, and although the presence of symptom criteria will assure a more reliable assessment, these are not sufficient in and of themselves to make a diagnosis (APA, 2013). Thus, although the DSM-5 definition of depression is used, it is recognised that structured clinical interviews are the gold standard for diagnosing mental disorders (Joiner et al., 2005), and the use of the DSM-5 term in this research is indicative of the presence of depressive symptoms.

Work-related stressors

First responders experience multiple stressors due to their occupational context, and this exposure increases their risk of experiencing psychological distress (Donnelly et al.,

2014). Work-related stressors are defined as adverse work experiences appraised as harmful or threatening (Cotton & Hart, 2003), and are usually categorised into two types: organisational stressors and operational stressors.

Organisational stress

Organisational stressors are defined as the harmful or threatening experiences which stem from the daily routines of ambulance personnel. Organisational stressors for ambulance personnel are similar to organisational stressors experienced by other occupational groups (Hart et al., 1993). Examples of organisational stressors include activities or tasks related to communication, supervision and equipment (Hart et al., 1993).

Operational stress

Operational stressors are considered specific to each organisational context (Hart et al., 1993), and are defined as experiences which stem from the tasks that only ambulance personnel assume. For first responders, it is the experience of operational stressors which set them apart from other occupations (Hart et al., 1993). Examples of operational stressors include activities or tasks related to workload, victims, and performing dangerous tasks (Hart et al., 1993).

Traumatic exposure

A specific type of operational stress that is frequently researched in the first responder literature is the experience of critical incidents, which are incidents considered sufficiently disturbing to overwhelm the individual's usual method of coping" (Alexander & Klein, 2001, p.76). These critical incidents are also categorised as traumatic events. The DSM-5 defines a traumatic event as "exposure to actual or threatened death, serious injury, or sexual violence" (APA, 2013). This event can be experienced directly; witnessed in person; learned that the event happened to a close family member or friend; or experienced repeatedly or the extreme exposure to aversive details. Examples given in the DSM-5 of

directly experienced traumatic events include: exposure to war, threatened or actual physical assault, threatened or actual sexual violence; being kidnapped; being taken hostage; natural or human-made disasters; and severe motor vehicle accidents (APA, 2013). Experience of a traumatic event as per the DSM-5 definition is the definition of traumatic exposure used in this research.

Social support

Social support is a complex and controversial construct due to its multiple vague definitions (Barrera, 1986). Barrera and Ainlay (1983) attempted to offer some clarity and based on the literature, proposed six category types of social support. These categories described the content of social support functions, and included: material aid; behavioural assistance; intimate interaction; guidance; feedback; and positive social interaction. Barrera (1986) further revised this categorisation into three broad categories: social embeddedness; perceived social support; and enacted or received support. Streeter and Franklin (1992) also conceptualise social support by these three categories, with the additional consideration of who provides the support. Sources of support concerns the provision of support, in that it can be provided informally and formally and given from multiple different people, including: friends, family, colleagues and community groups (Streeter & Franklin, 1992).

Based on the literature, two social support concepts will be investigated: perceived social support and received social support. Social embeddedness was not considered for this research as there is evidence to suggest that measures of social embeddedness often fail to explain the association between social support and psychological distress (Barrera, 1986). Instead, it was considered that both perceived and received support were important, as well as considering who provides this support, as this can have practical implications for ambulance services. Perceived support was considered to be an important construct as it has been recognised that perceived support is mostly strongly linked to health and wellbeing

(Wethington & Kessler, 1986). Although perceived support has a stronger relationship with health compared to received support, received support was also included in this study as it is reported to more accurately reflect the actual support received (Haber et al., 2007). Furthermore, measures of perceived support and received support are frequently only weakly correlated with one another (Barrera, 1986; Haber et al., 2007), suggesting two different types of social support. Sources of support were important to consider for this study as well because support effectiveness depends on the support source (Agneessens et al., 2006), and therefore has practical implications about who ambulance personnel consider supportive.

For this research, perceived social support is defined as the cognitive appraisal of being reliably connected to others (Barrera, 1986) and as supportive functions which are perceived to be available if needed (Wills & Shinar, 2000); received support is defined as actions from others when they are offering assistance (Barrera, 1986); and sources of support concerns the provision of support from different types of people, including both work (for example, supervisors and colleagues) and non-work supports (for example, spouse, family and friends; Heaney & Israel, 2002).

Method

This current study used a cross-sectional survey of Wellington Free Ambulance staff members. Participants voluntarily completed the 101-item survey (see Appendix A), which consisted of measures of the key variables introduced.

Study design

A cross-sectional design was chosen to investigate the research questions. Cross-sectional studies are frequently selected to ensure that variables are related to one another before committing to longitudinal research (Spector, 2019). In addition to being a good starting point for research, cross-sectional designs are also advantageous for smaller pieces

of research, are inexpensive, a good use of resources and useful for investigating prevalence data (Spector, 2019). It should be noted that due to the chosen design, there is no way to determine cause and effect relationships between the variables of interest, instead, this design is the foundation for understanding the current variables and how to further research in this area. Thus, a cross-sectional design was deemed an appropriate choice to answer the research questions.

Participants

Participants were a voluntary response sample, of 125 Wellington Free Ambulance staff members, from a population of approximately 330 staff members. This resulted in a response rate of 38%. The only inclusion criterion for this study was that participants were current Wellington Free Ambulance staff members. Participants differed in job roles, including Paramedics (61%), Communications staff (17%), Headquarters staff (15%), Patient Transfer Officers (4%) and Events staff (3%). The age range was from 23 to 64 (M = 37.99, SD = 10.66). Sixty two percent of staff were female and 38% were male. The majority of participants were New Zealand/Pākeha (87%), and in a relationship, either married or civil union (49.2%) or in a de facto relationship (30.6%). Seventeen percent of participants were single and 3.2% divorced or separated. Years of experience at Wellington Free Ambulance ranged from under one year to 37 years (M = 8.49, SD = 6.64), and participants were largely qualified, with the majority endorsing either a trade or professional certificate, (22%); a university degree or diploma (46%) or a postgraduate degree or diploma (23%). Nine percent had National Certificate of Educational Achievement (NCEA) Level 1, 2 or 3, which is the national qualification for secondary school in New Zealand. Most participants lived with at least one other person (93.6%) All participants reported exposure to at least one traumatic event.

Measures

The following measures are presented in the order they appeared in the survey, which is included in Appendix A.

Demographic information

Demographic characteristics such as: job role, age, gender, ethnicity, highest education level, marital status, number of people living in household, and length of employment, were obtained at the start of the survey.

Work-related stress measures

The Police Daily Hassles Scale (PDHS; Hart et al., 1993) is a work-related stress measure, which captures the negative work experiences that police officers are thought to experience on a daily basis. The scale items are based on a comprehensive review of the police literature, discussions with police personnel and other researchers, and developer, Hart's, own police experience (Hart et al., 1993). The PDHS requires respondents to indicate if an item has made them feel "pressured, hassled or bothered as a result of your work during the past month". Respondents use a Likert scale to indicate their responses, ranging from "The situation did not happen or did not make you feel hassled, bothered or pressured" to "The statement strongly applies to you". The PDHS consists of two major subscales; organisational hassles and operational hassles. One category from each of the subscales was selected to measure organisational and operational stressors.

There are few measures which target work-related stress for first responders, and so it was decided that due to the similarities which police and ambulance personnel share, it would be appropriate to use the PDHS. The PDHS has been used in emergency service work and is considered appropriate for use with ambulance personnel (A. Hart, personal communication, January 11, 2018). The main disadvantage of the PDHS is that it was developed to be used in conjunction with the Police Daily Uplifts Scale (PHUS, Hart et al., 1993), as this provides a more accurate picture of the organisational context. However, due

to brevity, it was decided that only subscales from the PDHS would be used. Furthermore, one of the subscales on the PDUS is Coworkers, and as social support is a key research concept, it was considered advantageous to use individual measures of social support, rather than the PDUS.

Organisational stress. Organisational stressors are daily experiences which are similar across organisations (Hart et al., 1993). Organisational stress was measured by the six-item category 'Communication', from the PDHS Organisation subscale. Responses are provided on a Likert scale. An example item is "having no say in decisions that affect me". The Communication subscale was selected for this as it was considered that ambulance personnel, like police officers, also deal with significant communication issues. The internal consistency coefficient for Communication has previously been reported as $\alpha = .88$, with an overall scale coefficient of $\alpha = .91$ (Hart et al., 1993). The Cronbach's Alpha for the current research was $\alpha = .85$.

Operational stress. Operational stressors are considered stressors specific to the organisation (Hart et al., 1993). Operational stress was measured by the four-item category 'Workload' from the PDHS Operational subscale. Responses are provided on a Likert scale. An example item is "insufficient time to complete a job". The Workload subscale was selected because it was expected that ambulance personnel would also have a similar workload and encounter the same hassles which police officers do. The internal consistency coefficient for Workload has previously been reported as $\alpha = .91$ (Hart et al., 1993). The Cronbach's Alpha for the current research was $\alpha = .89$.

Traumatic exposure

The Life Events Checklist-5 (LEC-5; Weathers et al., 2013) is a measure of exposure to potentially traumatic events across the lifespan. The checklist lists 16 traumatic events, and includes an extra item inviting respondents to list any other traumatic event they

have experienced. Respondents indicate whether exposure to events had “happened to you personally”, “witnessed it happen to someone else”, “learned about it happening to a close family member or close friend”, “were exposed to it as part of your job”, or “not sure if it fits”. An example item on the LEC-5 is “transportation accident”. The LEC-5 is a revision of the Life Events Checklist (LEC), which was originally developed by the National Centre for PTSD to be used with the Clinician Administered PTSD Scale (CAPS). The LEC and CAPS were recommended to be used together to delve more deeply into the specified index event and identify any PTSS present.

Due to minimal revisions, the LEC and the LEC-5 are considered very similar, and are reported to possess similar psychometric properties (U.S. Department of Veterans Affairs, 2019). The LEC has demonstrated good temporal stability with samples of undergraduate students and combat veterans (Gray et al., 2004). Gray et al. argued that temporal stability is the only appropriate psychometric for the LEC, due to the unsuitability of using internal consistency statistics. Internal consistency is considered unnecessary for measures of potentially traumatic events, because it is not expected that the events in the checklists will co-vary with one another (Gray et al., 2004). Simply because an individual has experienced one event, does not mean that they will experience another event. Thus, internal consistency analyses are deemed to be “inappropriate and potentially misleading” (Gray et al., 2004, p. 337). The LEC-5 was chosen for this research as it measures multiple potentially traumatic events as well as the different types of exposure, which is something unique to the LEC-5. This was particularly important for this research as the inclusion of the “part of your job” category was directly relevant to the study population, as ambulance personnel encounter more traumatic events than the general population. However, the main disadvantage of the LEC-5 is the inclusion of only 16 potentially traumatic events. The Traumatic Life Events Questionnaire (Kubany et al., 2000) includes more items on events

such as intimate partner abuse and childhood physical abuse. Although the LEC-5 has items concerning physical and sexual assault, it has been reported as lacking in coverage of all potentially traumatic events (Gray et al., 2004). As family violence is common in New Zealand (New Zealand Family Violence Clearinghouse, 2017), it may have been appropriate to include more detail around these items, especially as research suggests that childhood trauma can increase vulnerability to psychological distress in the face of stressors for the general population (McLaughlin et al., 2010) and for emergency service personnel (Behnke et al., 2020). However, due to the unique feature of the category "part of your job", and the elicitation of reliable information about exposure to potentially traumatic events across the lifespan, the LEC-5 was considered an appropriate measure for measuring traumatic exposure in this research. An important advantage in selecting the LEC-5 was due to the inclusion of potentially traumatic experiences across the lifespan, as there is some research that suggests that frequency of traumatic exposure influences the development of PTSS (Buchanan et al., 2001; Scott, 2007).

In terms of scoring, the LEC-5 items were separated into the following categories:

Global trauma included all items endorsed across all types of exposure to traumatic events (directly, witnessed, learned about and as part of their job)

Direct trauma included all items endorsed in the directly experienced type

Job trauma included all items endorsed in the experienced as part of my job type

Interpersonal trauma included all items which were perpetrated by other humans in the direct trauma type

Non-interpersonal trauma included all items which were not directly perpetrated by one human towards another human in the direct trauma type

Following the LEC-5, frequency estimates for each item were added. Respondents indicated the number of times they had experienced each item on a scale of one through to

nine, and 10 or more. Frequency estimates were included because there is currently mixed evidence regarding the impact of exposure to multiple traumatic events, where some researchers suggest that multiple exposure does not lead to an increase in PTSS (Weiss et al., 2010), whereas other researchers highlight the importance of cumulative traumatic exposure (Behnke et al., 2020).

In addition to frequency, another important consideration in traumatic exposure is the severity of the traumatic event (Chopko et al., 2016). Thus, another item was added following the frequency estimates, which required respondents to enter details about their "most distressing/traumatic event experienced". This item was an open text entry box, which allowed respondents to write as much or as little as they wanted.

PTSS

The Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013) assesses the 20 symptoms of PTSD according to the DSM-5 (APA, 2013). Respondents indicate how impacted they have been in the past month, by each of the items, in relation to one specific traumatic event. Answers are given on a Likert scale, ranging from "Not at all" to "Extremely". An example item enquires about potential "loss of interest in activities that you used to enjoy".

The PCL-5 was used as a screening tool for PTSS in this research. Participants with a score above the cut off of 31 to 33 have been recognised as experiencing symptoms consistent with DSM-5 criteria of PTSD (Weathers et al., 2013). The higher score of 33 is reported to minimise false positives (Weathers et al., 2013), and thus participants with scores of 33 and above were considered to have possible PTSS in this research, which was used for descriptive purposes.

The PCL-5 has been validated with war veterans and undergraduate students exposed to traumatic events. It demonstrated strong internal consistency, with $\alpha = .84$ and α

= .94, and adequate test-retest reliability of r = .84 and r = .82 (Belvins et al., 2015; Bovin et al., 2016). Convergent validity ranged from .74 to .85, showing close associations with the PCL, Posttraumatic Stress Disorder Scale and the Detailed Assessment of Posttraumatic Stress (Belvins et al., 2015). Discriminant validity showed scores were moderately correlated with constructs such as depression (r = .60) and least correlated with constructs such as mania (r = .31). The Cronbach's Alpha for the current research was $\alpha = .96$.

The PCL-5 is a popular and brief measure of PTSS and possesses strong psychometric properties. A significant advantage of the PCL-5 is the direct assessment of the symptoms of PTSD, as per the DSM-5 diagnosis, which made it the most appropriate scale of PTSS as it reflects the current conceptualisation of PTSD. In line with the literature, the PCL-5 is also frequently used in conjunction with the LEC-5, which was also used for this research.

The PCL-5 was preceded by the question about respondents "most distressing/traumatic event". It was expected that respondents would complete the PCL-5 based on the same index event as provided in the previous question.

Depression

The Patient Health Questionnaire 9 (PHQ-9; Kroenke et al., 2001) is a nine item self-report measure of depression, which targets the symptoms of depression according to the DSM-5 criteria. Respondents indicate if they have been bothered by any of the listed problems over the past two weeks on Likert scale, ranging from "Not at all" to "Extremely". A sample item is "feeling tired or having little energy". The PHQ-9 also consists of a tenth item, which requires respondents to indicate their level of difficulties with functioning at home, work or in relationships.

The PHQ-9 can be used as a tool for diagnosis and for determining severity of depression (Kroenke et al., 2001). In terms of severity, scores from 0-4 indicate no

depression; 5-9 mild depression; 10-14 moderate depression; 15-19 moderately severe depression; and 20-27 severe depression. A screening cut point of at least 10 is recommended to indicate the presence of major depression, with a sensitivity and specificity of 88% (Kroenke & Spitzer, 2002). Thus, a cut off score of 10 was used in this research, which was used for descriptive purposes.

The PHQ-9 was validated by two studies, with a sample of over 6,000, with internal consistency estimates of $\alpha = .89$ and $\alpha = .96$ (Kroenke et al., 2001). The PHQ-9 showed strong convergent validity with a similar measure, the five-item Mental Health Scale (MHI-5; Kroenke et al., 2001) and weak correlations with unrelated constructs (for example, disgust sensitivity; Beard et al., 2016). The PHQ-9 was also compared to two other health measures, (WHO Well Being Index, WBI-5; and Hospital and Anxiety Depression Scale, HADS) and was considered the best measure for diagnosing major depressive disorder (Lowe et al. 2014). The PHQ-9 also demonstrated higher criterion validity than the WBI-5 and HADS, which is likely due to the use of the nine major depressive disorder criteria from the DSM-5. The Cronbach's Alpha for the current research was $\alpha = .90$

There are many self-report instruments measuring depression; however, the PHQ-9 is deemed the most appropriate as it reflects the current conceptualisation of depression (Lowe et al., 2014). It also possesses excellent psychometric properties and has been extensively used within the New Zealand context, which provides helpful comparative data for this research.

Social support

Received support. The Inventory of Socially Supportive Behaviours, Short Form (ISSB; Barrera et al., 1981) is a 19-item scale derived from the larger 40-item ISSB. It measures how various examples of social support have been received during the preceding month. Respondents rate the frequency of each item on a 5-point Likert scale, ranging from

"Not at all" to "About every day". An example item on the ISSB is "did some activity together to help you get your mind off things".

The ISSB was developed as an inventory for assessing help received from key family members and friends (Barrera, 1986). This support is conceptualised as including both tangible (assistance and provision of goods and services) and intangible (guidance and expressions of esteem) resources (Barrera et al., 1981). The ISSB is considered an appropriate measure of "support mobilisation" or "aid provision" and measures a different concept than perceived availability of support (Measurement Instrument Database for the Social Sciences, 2016). Internal consistency reliability has been high, with an estimate of $\alpha = .84$ with mental health outpatients (Barrera & Baca, 1990). For a sample of undergraduate students, test-retest reliability was .88 over a two-day interval and .80 over one month (Barrera & Ainlay, 1984). The Cronbach's Alpha for the current research was $\alpha = .88$.

The ISSB is a unidimensional measure, and one which offers something different to those that measure perceived support or social network size (Stokes & Wilson, 1984). It was selected for this research in addition to a perceived support measure, as it is clearly measures received support, and is considered a good measure to be used as part of a multimethod assessment battery along with measures of perceived support to increase understanding of social support (Barrera et al., 1981).

Perceived social support. Perceived support was measured by two measures: The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988), and the Social Support Scale (Caplan et al., 1975).

The MSPSS is a brief self-report measure which assesses perceived support from three sources: family, friends and significant other. Ratings are made on a 7-point Likert scale ranging from "Very strongly disagree" to "Very strongly agree". There are 12 items on the MSPSS, and an example item is "I can count on my friends when things go wrong".

The MSPSS was developed to measure perceived availability of social support, as perceived social support is considered to be a better predictor of psychological status than objectively measured social support (Zimet et al., 1988). The MSPSS produces a total score, which is described as a useful measure of overall functioning and well-being (Osman et al., 2014). It also produces subscale scores, which identify different levels of support from different sources of support. The Cronbach's Alpha for subscales ranged from $\alpha = .85$ for Friends, $\alpha = .91$ for Significant Other, and $\alpha = .97$ for Family, with a Cronbach's Alpha of $\alpha = .88$ for the total scale (Zimet et al., 1988). Overall test-retest reliability was reported as .85 for the total scale, with adequate construct and factorial validity also demonstrated (Zimet et al., 1988; Zimet et al., 1990). The Cronbach's Alpha for the current research was $\alpha = .95$.

The MSPSS is an appropriate measure for this research as it directly measures perceived support from three types of sources. The total score has consistently shown to be a reliable and valid measure of perceived social support (Osman et al., 2014). Overall, the MSPSS has sound psychometric properties, and is brief and time efficient,

The Social Support Scale (Caplan et al., 1975) is a 4-item measure which assesses the level of perceived emotional and instrumental support from three sources: supervisors; colleagues; and spouse, family and friends. Respondents indicate this support on a 5-point Likert scale ranging from "Very little" to "A great deal". An example item from the Social Support Scale is "How much can each of these people be relied on when things get tough at work?".

The Social Support Scale has been used in many studies and is described as one of the most established scales used to measure social support in the context of work stress (Lim, 1997). The subscales of the Social Support Scale have frequently been used individually (e.g., Bowling et al., 2004; Lim, 1997), and internal consistency estimates with

a sample of postgraduate students were high, with α = .84 for supervisors and α = .78 for co-workers (Lim, 1997). The Cronbach's Alpha for the current research for each subscale were: supervisors α = .92; colleagues α = .90; and spouse/family α = .91.

For this research, the Social Support Scale was separated into individual subscales, with supervisor support, colleagues support, and spouse/family support used as individual measures. All subscales are measured on the same scale, and therefore higher mean scores indicate the source perceived to provide the most support. The Social Support Scale was selected for this study as it is used frequently in the literature, especially in the context of work stress (Halbesleben, 2006). It measures perceived support from three key sources of support, as supervisors (Halpern et al., 2012), colleagues (Donnelly et al., 2016), and spouse and family (Clohessy & Ehlers, 1999) have all been shown to be important sources of support for first responders. The Social Support Scale provides information for work and non-work supports and was an appropriate choice to measure perceived social support from these three important sources, in conjunction with the perceived and received support measures.

The Social Support Scale was used descriptively in this research, and not included in the analysis. Instead, it was used to get an understanding of which source was perceived as the most supportive source from the options given. It was considered that this scale should be used to provide additional information alongside the MSPSS for perceived support, as although this scale has been used extensively for investigating work stress (Lim, 1997), there are limited questions for each source. Thus, the Social Support Scale was used descriptively to provide additional information and to specifically help answer hypothesis four.

Procedures

The research proposal was presented to Wellington Free Ambulance's Wellaware Advisory Committee. A draft survey version went through a pilot testing phase with key groups including Wellington Free Ambulance's Executive Leadership Team (ELT) as well as the Wellaware Advisory Committee and other key stakeholders. Feedback was received from these groups and the survey adjusted accordingly. The final version of the survey was then accepted by the CEO, and was ready to launch. The weekend prior to the Wednesday launch date, there was an incident that WFA staff attended that the ELT felt would put some staff's welfare at risk if the survey was to go online on the scheduled date. For this reason, the launch date was extended to the following week. It is important to mention this as it is possible that this event impacted the results of the study and will be important to keep in mind through the interpretation phase of the study. On 23 May 2018, the survey went online.

Modality

Data was collected through an online survey through the website Qualtrics (see Appendix A), over a three-month period (23 May 2018 – 23 August 2018). The survey consisted of 101 items and took approximately 20-30 minutes to complete. Participants were provided with a Participant Information Sheet (see Appendix B) before they entered the survey and had to consent to participating in this survey by clicking "I agree". The Participant Information Sheet included background information about the research topic and researcher; eligibility to participate; participation requirements; confidentiality; participant procedures; participant rights; and how to find out about the results. There was also information given to encourage participants to seek help if they felt distressed due to the survey, with possible contacts listed (see Appendix C). If participants supplied their email address, they were entered into a prize draw to win one of twelve $40 gift vouchers as a

token of the researchers' appreciation of their participation. All participants who had opted to go in the draw were put in the draw each week. The prizes were drawn with the aid of a random number generator at the end of each week the survey was open.

Recruitment

Participants were recruited through Wellington Free Ambulance. Posters promoting the survey were developed and appeared at local stations and on Wellington Free Ambulance's intranet (see Appendix D). A similar advert was posted in Wellington Free Ambulance's weekly online newsletter, advertising the study and providing a brief introduction about the lead researcher. For each week that the survey was live, a small piece was published in Wellington Free Ambulance's online newsletter (see Appendix E). This announced the voucher winner of the previous week's draw and included a reminder for staff members to complete the survey. A banner also appeared on Wellington Free Ambulance's intranet homepage advertising the survey. The banner was present for the first and last two weeks of the survey live period. Team managers sent emails to their team members to encourage participation throughout the survey period.

Throughout the three-month data collection phase, response rates were monitored and reported to the Human Resources Business Partner and Executive Director of People and Culture. On two occasions, a breakdown of these were published in the newsletter as a way to encourage participation.

Ethical considerations

Ethical approval for the current research was granted by the Massey University Ethics Committee in January 2018 (Application 17/57). The main ethical considerations for this research were confidentiality and provision of supportive contacts if participants became distressed.

In order to access the survey, potential participants had to enter their employee number to gain access to the survey. This access page was a separate page to the survey itself. It was used to ensure that only Wellington Free Ambulance staff could complete the survey. A list of all current employee numbers were input into the system. No other identifiable information was included. Upon completion of the survey participants were also asked if they wanted to go in the draw to win a voucher and to receive a summary of the data. If they agreed, they were taken to another separate page, which was not linked to their survey responses. All of the data was stored on the Qualtrics website in the survey and on a personal password protected computer. To further ensure confidentiality, certain demographic questions such as participants' job role and ethnicity were excluded in analysis as this could have made participants identifiable due to a small response rate for groups within these demographics.

There is the potential for participants to become distressed upon thinking about the multiple stressful events they experience, as well as considering their most traumatic event. Thus, all participants were provided with contacts and numbers to seek support from if they felt distressed. This was shown in the Participant Information Sheet at the beginning of the survey, as well as shown again at the end of the survey.

Finally, to ensure that the survey was culturally appropriate, cultural expertise was sought from Māori researcher and clinical psychologist Dr. Simon Bennett, School of Psychology, Massey University. Dr. Bennett also agreed to be available to discuss any cultural issues that may arise throughout the research process.

Data analysis

Considerations prior to data analysis

Participant exclusion criteria

A total of 183 Wellington Free Ambulance staff members completed all or part of the current survey over the three-month period. Fifty-eight participants were removed for not completing 95% of the survey, resulting in a final sample of 125 participants.

Missing data

To analyse the pattern of missingness in this study, Little's Missing Completely at Random (MCAR) test was performed on the whole data set. The result of this test was non-significant ($X^2(433.52) = 410$, $p<0.20$), which suggested that data mas MCAR. Although 60% of participants had completed the entire survey with no missing data, an inspection of the values showed that 40% had values missing, ranging from 1% missing to 83% missing. In these situations, if case numbers allow, list-wise deletion is recommended (Spicer, 2005). List-wise deletion is appropriate if the data is MCAR, and if the remaining number of cases provides sufficient statistical power and are adequate for conducting multiple regression (Spicer, 2005). List-wise deletion is also preferred, rather than imputing values, as imputation can severely distort results (Spicer, 2005). Thus, list-wise deletion was used to delete cases with less than 95% of the survey completed, resulting in the deletion of 58 cases. Little's MCAR test was performed on the new sample of 125 cases, and it again returned a non-significant result ($X^2(361.60) = 328$, $p<.10$), suggesting the data is MCAR, as the probability of a random pattern of missingness is greater than .05.

The decision was then made to impute the remaining missing data values using the Expectation-Maximization (EM) method, as this is considered the simplest and most reasonable approach to imputation (Tabachnick & Fidell, 2013). The EM method is only acceptable to do with data that is MCAR, and with cases with no more than 5% missing data (Tabachnick & Fidell, 2013), which are all of the remaining cases. EM is a two-step process, with the first step of estimation, where estimates of the missing data are made

based on the existing parameters, followed by the second step of maximization, where these parameters are then optimized in order to best explain the model. This process is repeated until convergence is achieved and stable estimates are provided. EM was performed on each individual scale and produced data very similar to the rest of the data. EM was chosen because it contains less bias of standard error compared to other imputation processes (Tabachnick & Fidell, 2013).

Outliers

All variables were assessed on a univariate basis to identify any outliers. Through use of the 1.5 inter-quartile range (IQR) rule, as per Tukey's original formula (Tukey, 1977), there were 47 outliers identified from six variables (LEC-5, PHQ9, PCL, MSPSS, ISSB, SSS). However, Tabachnick and Fidell (2013) consider this rule to be too restrictive and recommend instead that values are converted to standard scores, and any values three standard deviations below or above the mean are considered outliers. Once converted into standardized Z scores, there were no scores above 3.29 in the data set. Thus, the data is considered to have no outliers.

Assumption checking: Univariate

Before analyses were run to test hypotheses, the statistical conditions required to produce accurate probabilities were checked. An important consideration is the normality of the data. To address this, all variables were viewed graphically, and no skewness or kurtosis was observed. No data was deemed to be overly skewed, with all variables displaying less than half a standard deviation between the mean and the median, as per Coolican's recommendations (2004). In terms of kurtosis, Tabachnick and Fidell (2013) report that it is preferable to look at the shape of the distribution with samples over 100, and all graphs were considered normal.

Assumption checking: Multivariate

Prior to conducting a hierarchical regression, the relevant assumptions of linearity, normal distribution, no outliers, multicollinearity and homoscedasticity were tested. Scatterplots were generated to visually check bivariate linearity and homoscedasticity. There was no indication of curvilinear relationships and all distributions were roughly the same width. Multicollinearity was assessed using the Tolerance and Variance Inflation Factor (VIF), with values less than 0.1 for Tolerance and less than 10 for VIF considered acceptable (Field, 2013). There were no values exceeding these limits, with the maximum Tolerance value recorded as .972, and VIF value as 5.52. Independence of cases was assessed using the Durbin-Watson statistic, and considered acceptable if the values were between 1 and 3 (Field, 2013), which all values were. In addition to the standardized score transformation, Cook's D statistic was also used to evaluate the impact of outliers, with values less than 1 considered acceptable. All values were less than 1, with a maximum of .262.

Consideration was given to centering the variables for moderation analyses, as there is controversy over whether centering should be performed. Field (2013) states that centering is necessary particularly when interaction terms are present; however, Jose (2013) does not recommend centering variables, as it rarely impacts the data. Centering of the variables was performed in order to test if it changed the results. It did not impact results, and thus centering was not performed for these analyses.

Chapter Five:

Traumatic exposure, work-related stressors and gender as risk factors in the development of psychological distress for ambulance personnel.

This chapter is in the form of a manuscript which has been accepted by an academic journal, *Traumatology.* It presents the first empirical results of the current study. It explores how work-related stress and traumatic exposure impact psychological distress for ambulance personnel, and whether gender moderates these relationships. By the end of the manuscript, readers should have a good understanding of the risk factors present for ambulance personnel in the development of psychological distress.

Abstract

Ambulance personnel experience many stressful factors as part of their job, including both organisational and operational stressors. Organisational stress such as communication issues, and operational stress, like workload and exposure to traumatic events are possible events that can lead to psychological distress, including posttraumatic stress symptoms (PTSS) and depression. The current study aimed to investigate how both traumatic exposure and work-related stress influence psychological distress. It was hypothesized that traumatic exposure, operational stress and organisational stress would be related to higher psychological distress outcomes (PTSS and depression) and that gender would moderate these relationships. One hundred and twenty-five ambulance personnel completed an anonymous survey. Hierarchical regression results demonstrated that traumatic exposure had a weak relationship with psychological distress, although operational stress had no relationship with psychological distress. Organisational stress was more strongly related to depression. Gender was found to moderate psychological distress in the context of operational stressors. Limitations to this study and these results are discussed, as well as possible future directions.

Keywords: Ambulance personnel, work-related stress, organisational stress, operational stress, psychological distress

Overview

Emergency service personnel have high levels of stress, physical and emotional exhaustion and work strain (Granter et al., 2019). Across a diverse range of 26 occupations, ambulance personnel were identified as one of the occupations which had the worst average scores across physical health, psychological health and job satisfaction (Johnson et al., 2005). In Australia, ambulance personnel have been recognised as having one of the most dangerous occupations, mostly due to the physical injuries experienced on the job (Maguire et al., 2014). In addition to physical injury, ambulance personnel also have higher rates of psychological distress compared to the general population, specifically concerning posttraumatic stress symptoms (PTSS), depression and anxiety disorders (Wagner et al., 2020).

Psychological distress studied within ambulance personnel include PTSS, depression, anxiety, general psychopathology, suicide, alcohol use and sleeping difficulties (Jones, 2017). PTSS is the most frequently researched disorder (Jones, 2017), and prevalence of PTSS for ambulance personnel has been estimated to vary between 0-60% (Wagner et al., 2020), or more specifically, a pooled prevalence estimate of 11% (Petrie et al., 2018). This is significantly higher than the lifetime prevalence for adults in Canada and the United States, which is estimated at 6.1-9.2% (Kessler et al., 2005), and 6% for New Zealand adults (Oakley Browne et al., 2006). The second most commonly researched disorder in ambulance personnel is depression, although it was reported that there needs to be an increased focus on this (Jones, 2017; Wagner et al., 2020). Similar to PTSS, depression rates are also elevated for ambulance personnel, with a reported 15% pooled prevalence rate (Petrie et al., 2018) and an estimated prevalence range of between 6.4% and 42.9% (Wagner et al., 2020). This is compared to the prevalence rates reported from the National Survey on Drug use and Health in United States, with 5.3% prevalence for adults

aged 26-49, and 4.5% in adults aged 50 and over (Substance Abuse and Mental Health Services Administration, 2019). In New Zealand, lifetime prevalence rate for depression (Major Depressive Disorder; based on the Diagnostic and Statistical Manual of Mental Disorders, fourth edition [DSM-IV; American Psychiatric Association, APA, 2013]) is 16%, with estimates of 11.4% for males and 20.3% for females (Oakley Browne et al., 2006).

As it is recognised that ambulance personnel are at a higher risk for developing psychological distress, risk factors for this distress have been investigated. The most frequently studied risk factor is the exposure to traumatic events. A traumatic event is defined in the DSM-5 as "exposure to actual or threatened death, serious injury or sexual violence" (APA, 2013). The DSM-5 identifies four major ways in which traumatic events can be experienced: directly experiencing the event; witnessing the event happen to others; learning the event occurred to a close family member or friend; and experiencing repeated or extreme exposure to aversive details of the traumatic event (APA, 2013). Examples of traumatic events included in the DSM-5 are severe motor vehicle accidents, human-made or natural disasters, catastrophic medical events and witnessing domestic violence (APA, 2013), all of which first responders are frequently exposed to.

Exposure to traumatic events are categorised as operational stressors which are factors considered specific to each work context (Hart et al., 1993). Although exposure to traumatic events is just one of the operational stressors which first responders experience, it is the primary feature which separates first responders from nearly every other occupation (Haugen et al., 2012). Other types of operational stressors include experiencing dangerous activities, driving, dealing with victims and the level of workload (Hart et al., 1993). These operational stressors are also considered risk factors in the development of psychological distress for first responders (Armstrong et al., 2016; Brough, 2004). In addition to

operational stressors, there are organisational stressors. Organisational stressors are defined as the daily experiences which are similar across organisations and can be experienced in any organisational setting (Hart et al., 1993). Examples of organisational stressors include problems related to supervision, colleagues, equipment, administration and communication (Hart et al., 1993). First responders share the same organisational factors with most, if not all, occupations (Hart et al., 1993), and these too are also considered risk factors for psychological distress (Bennett et al., 2005; Granter et al., 2019).

Both organisational and operational stressors are recognised as contributing to psychological distress. Chronic organisational stress has frequently been shown to be associated with many physical and psychological problems in the general population (Donnelly et al., 2014). In the few studies in which organisational stressors have been investigated in ambulance personnel, they have been linked with significant psychological distress (Bennett et al., 2005; Brough, 2005). However, there is still controversy surrounding this, as some studies in the wider first responder population show no relationship between organisational stress and mental health (Armstrong et al., 2016). There appears to be no clear consensus regarding which type of stressor has the largest impact on psychological distress, or even if organisational stressors do in fact contribute to psychological distress. Most recently, Wagner et al. (2020) highlighted the importance of distinguishing between psychological distress associated with work-related traumatic stress, and that manifested due to organisational stress. This recent statement emphasises the essential need to continue to investigate organisational stressors and their impact for ambulance personnel.

In addition to the occupational context, another frequently explored risk factor for psychological distress with ambulance personnel is gender (Wagner et al., 2020). Females are reported to experience more stress than males (Matud, 2004). This extends to females in

the workplace, where female police officers experience more workplace problems compared to their male counterparts (Hassell et al., 2011), and although there is inconsistent evidence, most of the research has suggested that females report higher workplace stress compared to males (Gyllensten & Palmer, 2005). Additionally, females have a higher lifetime prevalence of both PTSS and depression, compared to males in the general population (Kessler et al., 2005), and it was historically considered that female first responders would have an elevated risk of developing psychological distress (Gehrke & Volanti, 2006). However, some research suggests that the higher prevalence of psychological distress for females in the normal population disappears for female first responders (Lilly et al., 2009). Within the ambulance personnel population, gender has most recently been reported as an inconsistent predictor of symptoms of PTSS and depression, with a recommendation that more research is needed to better understand these relationships (Wagner et al., 2020).

There are many different potential risk factors which can contribute to psychological distress for ambulance personnel, including work-related stressors and gender, and it is both a matter of public and employee safety to consider these factors (Jones, 2017). Understanding the occupational context, and the prevalence and risk factors of psychological difficulties for ambulance personnel has been recognised as important areas of research (Bennett et al., 2005; Jones, 2017; Wagner et al., 2020), with particular importance placed on the need to distinguish between operational and organisational stressors and their relationship with psychological distress (Wagner et al., 2020).

The current study aims to investigate potential risk factors for psychological distress in New Zealand ambulance personnel, with a particular focus on levels of traumatic exposure, operational and organisational stress and gender. International research with ambulance personnel suggests a positive relationship between traumatic exposure and

psychological distress (Wagner et al., 2020) and work-related stress and psychological distress (Donnelly et al., 2014). There is also evidence which suggests that gender can moderate these relationships, although this needs to be explored further (Wagner et al., 2020). Thus, specific hypotheses for this research are:

Hypothesis 1: Traumatic exposure will positively predict psychological distress

Hypothesis 2: Operational stress will positively predict psychological distress

Hypothesis 3: Organisational stress will positively predict psychological distress

Hypothesis 4: Gender will moderate these relationships, in that the effect of work-related stress on psychological distress will be stronger for females

Method

Participants

A sample of 125 Wellington Free Ambulance staff participated, consisting of Paramedics (61%), Communications staff (17%), Headquarters staff (15%), Patient Transfer Officers (4%) and Events staff (3%). The age range was from 23 to 64 (M = 37.99, SD = 10.66). Years of experience at Wellington Free Ambulance ranged from under one year to 37 years (M = 8.49, SD = 6.64). Sixty two percent of staff were female and 38% were male (numerically coded as 0 for male and 1 for female). Most of the participants were in a relationship, either married or civil union (49.2%) or in a de facto relationship (30.6%). The majority of participants were New Zealand European/Pākehā (87%), and as a result of this, ethnicity was grouped into two categories: New Zealand European (numerically coded as 1); and non-New Zealand European (numerically coded as 0). Seventeen percent of participants were single and 3.2% divorced or separated. Participants were largely qualified, with 22% holding a trade or professional certificate or diploma, 46% with a university degree or diploma and 23% with a postgraduate degree or diploma. Nine percent had NCEA Level 1, 2 or 3, which is the national qualification for secondary school in New Zealand.

Most participants lived with at least one other person, with 33.6% residing with one other member, 21% with two other members, and 37.4% with three or more other members. The remaining 8.4% of participants lived alone. All participants reported exposure to at least one traumatic event. There are approximately 330 staff members employed by Wellington Free Ambulance, resulting in a response rate of 38%.

Measures

Traumatic exposure. Traumatic exposure was measured by the Life Events Checklist 5 (LEC-5; Weathers et al., 2013). The LEC-5 is a 17-item measure of exposure to potentially traumatic events. Respondents are required to indicate if they have experienced an event either: directly; witnessed it; learned about it happening to close friend or family member; or experienced it as part of their job. The LEC-5 is considered very similar to the original Life Events Checklist (LEC) due to minimal revisions, so psychometric properties for the original LEC are expected to be applicable for the LEC-5 as well. Psychometric properties for the LEC demonstrate good temporal stability and convergent validity (Gray et al., 2004). In terms of scoring, the LEC-5 items were separated into the following categories:

Global trauma included all items endorsed across all types of exposure to traumatic events (directly, witnessed, learned about and as part of their job)

Direct trauma included all items endorsed in the directly experienced type

Job trauma included all items endorsed in the experienced as part of my job type

Interpersonal trauma included all items which were perpetrated by other humans in the direct trauma type

Non-interpersonal trauma included all items which were not directly perpetrated by one human towards another human in the direct trauma type

Participants were also asked to name their most distressing event and invited to provide as much or as little detail as they wanted.

Operational stress. Operational stress was measured by the subscale 'Workload', from the Police Daily Hassles Scale (PDHS: Hart et al., 1993). The PDHS is a measure used to assess the negative work experiences police officers encounter on a daily basis, and is considered appropriate for use with other emergency service personnel (A. Hart, personal communication, January 11, 2018). The Workload subscale consists of four items related to the daily workload of the individual. Internal consistency coefficients were reported as excellent for the whole scale as well as individual subscales, with a coefficient of .79 for Workload (Hart et al., 1993). The Cronbach's Alpha for the current sample was $\alpha = .87$.

Organisational stress. Organisational stress was measured by the subscale 'Communication', from the PDHS. The Communication subscale consists of four items related to daily communication issues that can arise for individuals. The Communication subscale consists of four items related to daily communication issues that can arise for individuals. Internal consistency coefficient for Communication was reported as .88. The Cronbach's Alpha for the current sample was $\alpha = .87$.

Psychological distress. Psychological distress was measured as PTSS and depression.

PTSS. PTSS was measured by the Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013), which is a 20-item self-report measure. The PCL-5 assesses the 20 symptoms of PTSD according to the DSM-5 (APA, 2013) in relation to the experience of one specific traumatic event. It has strong psychometric properties, including excellent internal consistency, test-retest reliability, convergent validity and discriminate validity (Belvins et al., 2015). The Cronbach's Alpha for the current sample was $\alpha = .96$. The PCL-5 can assist in providing a provisional diagnosis of PTSD (Weathers et al., 2013).

With recommended cut off scores of 31-33, the higher value is considered optimal when trying to make provisional diagnoses, and also to minimise any false positives (Weathers et al., 2013). Thus, the higher cut off score of 33 was used in this research.

Depression. Depression was measured by the Patient Health Questionnaire 9 (PHQ-9; Kroenke et al., 2001), a 10-item self-report measure of depression, which assesses the nine symptoms of a Major Depressive Episode according to the DSM-5. Internal reliability and convergent validity have been reported as excellent (Kroenke et al., 2001; Lowe et al., 2004). The Cronbach's Alpha for the current sample was $\alpha = .90$. The PHQ-9 can be used to establish provisional diagnoses of depression as well as indicate severity of symptoms (Kroenke & Spitzer, 2002). A cut off score of 10 is recommended, which comes with a sensitivity and specificity for providing a provisional diagnosis of major depression of 88% (Kroenke & Spitzer, 2002). Thus, the cut off score of 10 was used in this research.

Procedure

The research proposal was presented to Wellington Free Ambulance's Wellaware Advisory Committee. A draft survey version was pilot tested with key groups including Wellington Free Ambulance's Executive Leadership Team (ELT), the Wellaware Advisory Committee, and other key stakeholders. Feedback was received from these groups and the survey adjusted accordingly. The survey consisted of 101 items, and took approximately 20-30 minutes to complete. Participants were provided with a Participant Information Sheet prior to completing the survey and were given the option of receiving a summary of results upon completion. Participants could also opt in to be entered into a prize draw to win one of 12 $40 grocery vouchers as a token of researchers' appreciation for completing the survey.

Statistical analysis

SPSS version 25 was used to conduct statistical analyses. Hierarchical regression analyses with interaction terms were computed to test the hypotheses by controlling for

demographic variables and testing for the added value of the independent variables (Field, 2018). A separate hierarchical regression analysis for each psychological distress variable (PTSS and depression) was completed. Step 1 consisted of relevant demographic control variables, step 2 added in organisational stress, operational stress and direct trauma, and step 3 included the interaction terms for gender by organisational stress, gender by operational stress and gender by direct trauma. This information was then inputted into ModGraph (Jose, 2013), a software program that graphs the interaction results and calculates the simple slopes. Assumptions of linearity, normal distribution, no outliers, multicollinearity, homoscedasticity and adequate sample size were all satisfied for correlation and regression analyses.

Results

Table 5.1 presents the descriptive statistics and Pearson r correlations for variables included in this study.

Table 5.1

Descriptive statistics and correlations for variables

	Age	Ethnicity	Gender	Role	Job length	Quals	Marital status	House members	Depression	PTSS	Organisational stress	Operational stress	Global trauma	Job trauma	Direct trauma	Interpersonal trauma
Age	–															
Ethnicity	.06	–														
Gender	-.13	-.01	–													
Role	.13	.13	.13	–												
Job length	.57**	-.02	-.14	-.15	–											
Quals	-.20*	.08	.00	-.12	-.02	–										
Marital status	-.05	.01	.08	-.07	.02	.04	–									
House members	.06	-.01	-.05	.00	-.04	.15	-.09	–								
Depression	-.03	-.21*	.26**	-.09	-.06	.02	-.08	-.03	–							
PTSS	-.19*	-.16	.30**	-.13	-.18*	.00	-.14	.05	.68**	–						
Organisational stress	-.03	-.12	.05	-.18*	.01	.09	.04	-.03	.32**	.26**	–					
Operational stress	-.04	-.15	.25**	-.01	.08	.02	.03	.08	.11	.15	.42**	–				
Global trauma	-.16	.01	-.13	-.33**	.11	.13	.05	-.03	.06	.06	.10	.07	–			
Job trauma	-.138	-.02	-.07	-.31**	.20*	.13	.14	-.08	-.02	-.02	.11	.07	.70**	–		
Direct trauma	.09	.03	-.08	-.10	.02	.01	-.15	.08	.18*	.18*	.08	-.09	.55**	.12	–	
Interpersonal trauma	-.14	-.01	.05	-.16	-.01	.09	.04	.02	.13	.11	.14	.02	.71**	.72**	.54**	–
Means	–	–	–	–	–	–	–	–	6.38	16.40	13.28	9.33	24.26	8.62	4.18	3.90
SD	–	–	–	–	–	–	–	–	5.47	16.52	7.58	5.93	12.26	4.75	2.44	2.22

Note. Quals = qualifications, PTSS = posttraumatic stress symptoms

** p < .05. ** p < .01

Traumatic exposure

Based on the LEC-5, 100% of the sample endorsed the experience of at least one life event. The most commonly experienced events included: transportation accident; life-threatening illness or injury; sudden violent death; and sudden accidental death. The least commonly experienced events were combat or exposure to war zone and captivity. Participants were also asked to provide a description of their most distressing event. Of this sample, 111 participants (88.8%) provided a description of their most distressing event. Sixty five percent indicated that this event was work-related. Of these events, the most commonly reported distressing events were related to attending a suicide (23.6%), death of a child (13.9%), attending motor vehicle accidents (13.9%), and death of patient (12.5%).

Psychological distress

Based on the cut off score of 33, 20% (n = 25) of the sample is considered to have a provisional diagnosis of PTSS. Based on the cut off score of 10, 28% (n = 35) of the sample is considered to have a provisional diagnosis of depression. See Table 5.2 for a breakdown of severity scores for depression.

Table 5.2

Depression (PHQ-9) severity scores

PHQ-9 severity category	Percentage of sample (n = 125)
None (1-4)	44.0
Mild (5-9)	28.0
Moderate (10-14)	19.2
Moderately severe (15-19)	8.0
Severe (20-27)	0.8

Note. PHQ-9 = Patient Health Questionnaire.

Regression analysis

Depression

The results of the hierarchical regression analysis of depression are presented in Table 5.3. Gender, age and ethnicity (correlates of psychological distress) were entered in Step 1. This step significantly explained 9.7% of variance in depression, F(3, 107) = 3.83, p = .012). At this step, gender (B = .22, p .017), and ethnicity (B = -.23, p = .017) were significant predictors. Organisational stress, operational stress and direct trauma were added in step 2, and significantly explained an additional 8.2% of variance, F(6, 104) = 3.77, p = .002). Direct trauma was selected for the trauma measure because research shows that trauma which has happened directly to individuals is most likely to cause psychological distress (Dohrenwend et al., 2006; Michael et al., 2016). At step 2, gender and ethnicity remained significant, with the addition of organisational stress (B = -.24, p = .015) as a significant predictor.

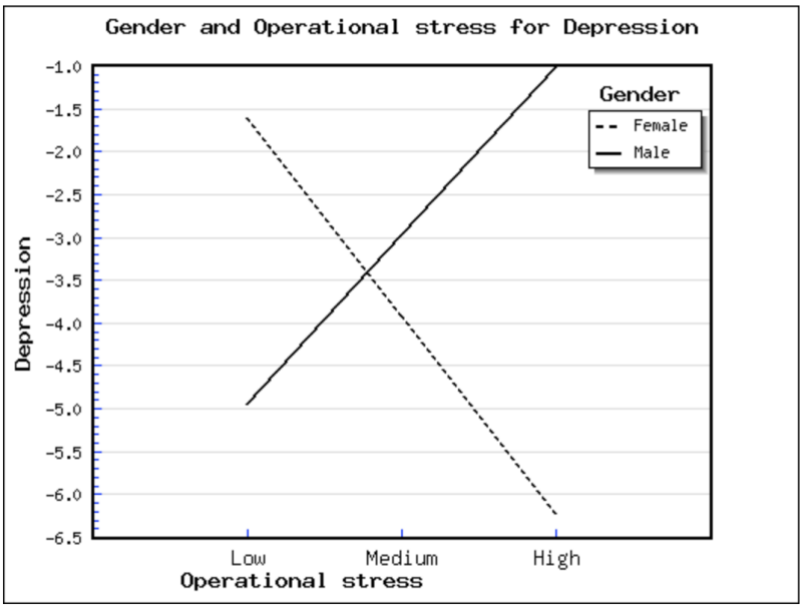
As shown in Table 3, gender was a significant predictor of depression in steps 1 and 2 of the model. In step 3, interaction terms were created with gender and organisational stress, gender and operational stress, and gender and direct trauma. At this step, the interaction terms provided an additional 12.3% of variance, F(9, 101) = 4.84, p = .000). The interaction of gender and operational stress (B = -.94, p = .000) was a significant predictor of depression. Figure 5.1 describes the way that gender moderated the relationship between operational stress and depression.

Table 5.3
Hierarchical regression of depression scores on direct trauma, work-related stressors, and interaction terms, while controlling for demographic variables.

		Unstandardized Coefficients		Standardized Coefficients
Model		B	Std. Error	Beta
1	(Constant)	3.37	2.58	
	Gender	2.42	1.00	.22*
	Age	-.00	.05	-.01
	Ethnicity	-.70	.29	-.22*
2	(Constant)	-.04	2.81	
	Gender	2.97	1.02	.28*
	Age	-.00	.04	-.01
	Ethnicity	-.70	.28	-.22*
	Organisational stress	.17	.07	.24*
	Operational stress	-.12	.09	-.14
	Direct trauma	.35	.20	.16
3	(Constant)	-6.08	5.19	
	Gender	5.77	2.75	.54*
	Age	.03	.04	.06
	Ethnicity	-.59	.27	-.19*
	Organisational stress	.09	.11	.13
	Operational stress	.33	.14	.38*
	Direct trauma	.23	.30	.11
	GendxOrgStress	.17	.13	.29
	GendxOperStress	-.72	.18	-.94**
	GendxTrauma	.26	.38	.13

Note. $R^2 = .10$ for Step 1; $\Delta R^2 = .08$ for Step 2 (ps <.02); $\Delta R^2 = .12$ for Step 3 (ps <.00).
* p < .05. ** p < .01

Figure 5.1
Interaction of gender and operational stress on depression scores



PTSS

The results of the hierarchical regression analysis to predict PTSS is presented in Table 5.4. Gender, age and ethnicity were entered in Step 1. This step significantly explained 12.6% of variance in PTSS, F(3, 107) = 5.14, p = .010). At this step, only gender (B = .25, p = .007) was a significant predictor. Organisational stress, operational stress and direct trauma were added in step 2, and significantly explained an additional 5.9% of variance, F(6, 104) = 3.93, p = .001). At this step, gender (B = .28 p = .004) remained a significant predictor, with the addition of age (B = -.18, p = .048), and direct trauma (B = .20, p = .031).

Gender was hypothesised to be a moderator of the relationship between psychological distress and traumatic exposure, operational stress and organisational stress. As shown in Table 5.4, gender was a significant predictor of PTSS in steps 1 and 2 of the model. In step 3, interaction terms were created with gender and organisational stress, gender and operational stress, and gender and direct trauma. At this step, the interaction

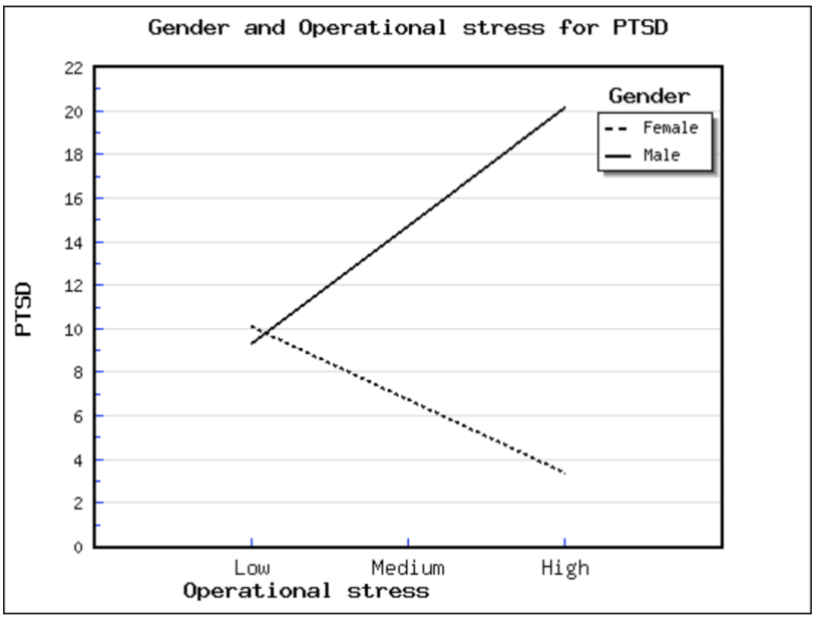
terms explained an additional 7.7% of variance F(9, 101) = 3.99, p = .000). The interactions of gender and organisational stress (B = .49, p = .040), and gender and operational stress (B = -.66, p = .007) were significant predictors of PTSS. Figure 5.2 describes the way that gender moderated the relationship between operational stress and PTSS.

Table 5.4
Hierarchical regression of PTSS scores on direct trauma, work-related stressors, and interaction terms, while controlling for demographic variables.

		Unstandardized Coefficients		Standardized Coefficients
Model		B	Std. Error	Beta
1	(Constant)	13.96	7.47	
	Gender	7.97	2.89	.25*
	Age	-.25	.13	-.17
	Ethnicity	-1.30	.83	-.14
2	(Constant)	3.85	8.21	
	Gender	8.77	2.97	.28*
	Age	-.26	.13	-.18**
	Ethnicity	-1.21	.83	-.13
	Organisational stress	.27	.20	.13
	Operational stress	.02	.26	.01
	Direct trauma	1.26	.58	.20*
3	(Constant)	6.21	15.68	
	Gender	5.81	8.29	.18
	Age	-.19	.13	-.13
	Ethnicity	-.82	.81	-.09
	Organisational stress	-.21	.32	-.10
	Operational stress	.91	.43	.36*
	Direct trauma	.62	.90	.10
	GendxOrgStress	.84	.41	.49*
	GendxOperStress	-1.48	.54	-.66**
	GendxTrauma	1.09	1.15	.19

Note. R^2 = .13 for Step 1; ΔR^2 = .06 for Step 2 (ps <.06); ΔR^2 = .07 for Step 3 (ps <.02).
* p < .05. ** p < .01

Figure 5.2
Interaction of gender and operational stress on PTSS scores



Discussion

The current study aimed to investigate potential risk factors for psychological distress in New Zealand ambulance personnel. It was hypothesised that traumatic exposure, organisational stress, operational stress and gender would be risk factors for the development of symptoms of PTSS and depression. Results partially supported these hypotheses.

The impact of traumatic exposure on psychological distress

This hypothesis was supported although effects were weak. Ambulance personnel's direct experience of traumatic events was related to PTSS scores. This finding is supported by Brooks et al.'s (2016) systematic review amongst disaster responders, in which the majority of studies found significant relationships between exposure and distress. However, Brooks et al., also highlighted the inconsistencies across the literature, where there were multiple studies which found no significant relationship for traumatic exposure and

psychological distress. The unexpectedly weak relationship in this sample points to the need to consider measurement issues in future reviews.

Direct traumatic exposure did not predict depression in this research. A possible explanation is that this sample of ambulance personnel are not greatly impacted by the exposure to traumatic events because these are an expected and rewarding part of the job (Boudreaux & Mandy, 1996; Granter et al., 2019). As highlighted by Bennett et al. (2005), the satisfying nature of dealing with potentially traumatic incidents is generally the reason why ambulance personnel took up the job. It may be that this appeal decreases the impact of any possible depressive symptoms. Brooks et al. (2020) even found that after a disaster, it was common for disaster-work employees to value their lives more, experience increased self-esteem and gain a better understanding and appreciation of disaster work. These post-disaster experiences may somewhat protect first responders from developing any symptoms of psychological distress.

The impact of work-related stressors

The predicted relationship between operational stressors and psychological distress was not supported by the results. The lack of finding within this sample of ambulance personnel may best be explained by the fact that operational stressors are perceived as an expected and rewarding part of their job, as discussed above.

Organisational stress significantly predicted depression in the regression analysis. These results support some of the wider first responder literature which suggests that organisational factors influence wellbeing more strongly than operational factors (e.g., Bennett et al., 2005; Kop et al., 1999). There is significant evidence that compared to operational stressors, routine organisational stressors appear to be more strongly associated with anxiety and depression (Bennett et al., 2005). Organisational stressors have even been reported to increase psychological distress over six times more than operational stressors

(Violanti & Aron, 1993), and are generally considered more difficult to deal with compared to the stress associated with critical incidents (Bennett et al., 2005).

This relationship between organisational stressors and psychological distress has also been demonstrated with ambulance personnel (Bennett et al., 2005; Granter et al., 2019; Sparrius, 1992). Ambulance personnel have reported that although all of their work is considered exhausting and intense, the most challenging aspect is the daily background stressors, rather than the actual emergency work (Gallagher & McGilloway, 2008; Granter et al., 2019). The challenging nature of organisational factors is also evident in the present study and suggests that organisational hassles are not an expected or enjoyable part of ambulance personnel's roles, as these are perceived as "unwanted, frustrating and distressing" (Bouderaux & Mandy, 1996, p.72). Very few studies have demonstrated that organisational factors do not influence psychological distress (Armstrong et al., 2016; Brough, 2004;), with the majority of studies highlighting the important impact organisational stressors have on first responders' wellbeing.

Gender

Gender was hypothesised to moderate the relationships discussed above. Results partially supported this, with gender moderating the relationships between operational stress with depression and PTSS. For both PTSS and depression, females generally reported lower levels of psychological distress at higher levels of operational stress. This was the opposite for males, who experienced more distress at higher levels of operational stress. This finding contrasts with literature that generally recognises female gender as a risk factor for the development of psychological distress in the general population (Kessler et al., 2005).

Among ambulance personal however, gender has been recognised as an inconsistent predictor of PTSS and depression. A review of psychological distress in ambulance personnel (Wagner et al., 2020) found that four of seven studies exploring gender as a risk

factor, found no significant associations (Clohessy & Ehlers, 1999; Donnelly, 2012; Fjeldheirm et al., 2014; Misra et al., 2009). The remaining three reported a higher prevalence of PTSS in females compared to males (Bennett et al., 2004; Rybojad et al., 2016; Yip et al., 2016). Likewise, the study of gender as a risk factor for depression in ambulance personnel was also inconsistent (Wagner et al., 2020). Of the few studies of depression, two reported no significant associations (Bennett et al., 2005; Courtney et al., 2013); one reported higher prevalence of depression in females (Yip et al., 2016); and one reported higher prevalence in males (Bentley et al., 2013). It was recommended that more work is undertaken to understand the relationship between gender and psychological distress in ambulance personnel (Wagner et al., 2020). The current study's finding contributes to this research, although further complicates the results and therefore also recommends continued research in this area.

A possible explanation for the finding that males experience higher psychological distress levels when operational stressors are high, is that at these high levels of operational stress, females may utilise more coping strategies, particularly the use of social support. Social support is a moderator of the effects of stress on health (Cohen & Wills, 1985), and it is recognised that females are more likely to access this support than males (Kendler et al., 2005; Turner, 1994). Additionally, males may experience more distress at higher levels of operational stress and since this is deemed a key part of the job, males may feel unable to access social support due to the recognised "macho" environment in which ambulance personnel operate in (Gallagher & McGilloway, 2009). This macho atmosphere is a significant barrier to accessing work supports in studies of male-dominated ambulance organisations (Regehr et al., 2002; Gallagher & McGilloway, 2009). Thus, the possible reduced access of social support and the macho environment, which is generally

characteristic of ambulance organisations, may influence the increased psychological distress for males shown in this study.

Limitations and future directions

There are several limitations to consider. Firstly, it is recognised that those who do not participate in trauma research often have more health problems than those who do participate (van der Ploeg & Kleber, 2003) and accordingly the current study may not have attracted those with higher psychological distress. However, the rates of depression and PTSS reported by the sample were relatively high, which may have resulted in inclusion of these participants. The prevalence rates for this study are somewhat higher than Petrie et al.'s (2018) pooled prevalence of 11% for PTSS and 15% for depression, but fit in the ranges reported by Wagner et al. (2020) of 0-60% for PTSS and 6.4-42.9% for depression.

Inviting only current Wellington Free Ambulance employees to participate in the survey means that ex-employees who may have left their role due to mental health difficulties were not included. It is possible that these ex-employees experienced higher rates of distress and/or used maladaptive coping strategies (Bennett et al., 2005), which could explain leaving the role, as it has been found that traumatized workers are likely to retire early (Berger et al., 2012). It will be important in the future to consider including ex-employees in research with ambulance personnel as their distress and coping strategies may differ to current employees.

An important limitation which is common in the literature concerns the use of self-report instruments, as it is recognised that people often report inaccurate data (Donnelly et al., 2016). For example, due to a machismo environment and the strength and self-reliance that ambulance personnel are expected to possess (Kirby et al., 2011), participant responses may not have reflected their distress levels accurately. Clinical interviews in the investigation of mental disorders, particularly the diagnosis of PTSS, are considered the

gold standard, Self-report instruments were chosen for resource reasons in the current study. All the instruments selected were considered reliable and valid for use with ambulance personnel, however it will be important to consider the use of clinical interviews to further research in this area.

Finally, by focusing on PTSS and depression in ambulance personnel, this meant that other important issues, such as anxiety, sleep and substance use were not considered. Jones (2017) and Wagner et al. (2020) highlighted the lack of studies investigating mental disorders other than PTSS, and reported the importance of exploring these further. Similarly, another important focus of research is the exploration of posttraumatic growth, which may have a significant influence on ambulance personnel's psychological distress.

Conclusion

The current findings suggest that the prevalence rates of PTSS and depression for New Zealand ambulance personnel are within ranges reported in the international literature. Direct traumatic exposure was shown to predict PTSS while operational stress did not predict psychological distress. It is possible that traumatic exposure and operational stress are expected and rewarding parts of the job and therefore have a small impact, if any, on psychological distress. Organisational stress however, significantly predicted depression, which supports a growing focus on identifying the detrimental effects of organisational stressors (rather than distress related to operational stressors) is important in order to develop helpful interventions for this population. Females generally reported lower levels of depression and PTSS in the face of higher operational stress.

These findings contribute to the small but growing literature for ambulance personnel, with a specific focus on New Zealand ambulance personnel, and show direct exposure to traumatic events to be associated with PTSS and the experience of organisational stressors

to be more impactful than operational stressors. Female gender was not found to be a risk factor in the development of psychological distress in this study which suggested that females may have additional coping resources compared to males. More research is needed with both a continued focus on PTSS and depression, as well as a broadened focus on other types of psychological distress.

DRC 16

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STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Tayla Reti
Name/title of Primary Supervisor:	Dr Ian de Terte
In which chapter is the manuscript /published work:	Chapter 5

Please select one of the following three options:

◯ The manuscript/published work is published or in press

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Reti, T., de Terte, I., & Stephens, C. (2021). Traumatic exposure, work-related stressors and gender as risk factors in the development of psychological distress for ambulance personnel. Traumatology. Advance online publication. https://doi.org/10.1037/trm0000315

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Date:	05.03.21
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Chapter Six:

Perceived social support predicts psychological distress for ambulance personnel

The preceding chapter presented the initial results and built the foundation for investigating the impact of social support on significant work-related stressors. This chapter is in the form of a manuscript which has been accepted by an academic journal, *Traumatology.* It presents the remaining empirical results of the current study. It explores the impact of social support on psychological distress in the context of work-related stressors. By the end of the manuscript, readers should have a good understanding of which types of social support protect against psychological distress for ambulance personnel.

Perceived social support predicts psychological distress for ambulance personnel

Abstract

Ambulance personnel experience many work-related stressors, which can result in psychological distress including posttraumatic stress symptoms (PTSS) and depression. A frequently studied coping strategy to protect against this psychological distress is social support. Social support is a resource provided by others and may be categorised as received or perceived support. The current study aimed to investigate the impact of social support on psychological distress, in the context of organisational stressors and direct traumatic events. It was hypothesized that social support would predict psychological distress outcomes (depression and PTSS), and that gender would moderate this relationship. It was also expected that social support would moderate the relationship between organisational stressors and depression, and direct trauma and PTSS. Spouse/family members were expected to be perceived as the most supportive source. One hundred and twenty-five ambulance personnel completed an anonymous survey. Hierarchical regression results demonstrated social support predicted depression and PTSS, although this was not moderated by gender. Perceived social support had a larger effect on psychological distress than received support, and the most supportive source was perceived to be spouse/family. Social support did not moderate the relationship between organisational stressors and depression or direct trauma and PTSS. Limitations to this study and these results are discussed, as well as possible future directions. The increase in accuracy of social support measures and focused research on identifying work cultures that can support both male and female ambulance personnel would be valuable future directions.

Keywords: Ambulance personnel, social support, perceived social support, received social support, work-related stressors,

Overview

First responders are a unique group of workers who have been shown to have higher rates of psychological distress compared to the general population (Lewis-Schroeder et al., 2018). Forms of elevated psychological distress frequently researched for ambulance personnel in particular, include posttraumatic stress symptoms (PTSS) and depression (Jones, 2017). Rates of PTSS up to 60% and rates of depression between 6.4% and 42.9% have been reported for ambulance personnel (Wagner et al., 2020).

A contributing factor to this elevated psychological distress is routine exposure to work-related stressors (Donnelly, 2012). Operational stressors are a type of work-related stressor, and are defined as activities specific to the service, and for emergency services, are stressors such as workload, dangerous activities and exposure to traumatic events (Hart et al., 1993). Brooks et al., (2016) demonstrated a significant relationship between exposure to operational stressors and distress in their systematic review amongst disaster responders. However, research with ambulance personnel in particular has shown that operational stressors do not significantly impact psychological distress (Reti et al., in press). Although the category of operational stressors has an inconsistent impact on psychological distress, a specific type of operational stressor, exposure to traumatic events, has more consistently demonstrated a stronger relationship with trauma symptoms (Brewin et al., 2000). This is also true for ambulance personnel in previous research, where direct traumatic exposure was shown to predict PTSS (Reti et al., in press). Thus, although the impact of the category of operational stressors appears to be inconsistent, exposure to traumatic events as a specific experience seems to impact PTSS.

Similarly, another work-related stressor recognised as contributing to psychological distress for ambulance personnel is organisational stress (Donnelly, 2012; Reti et al., in press). Organisational stressors are experienced across most organisations, and include

communication and administration issues (Hart et al., 1993). For ambulance personnel, these routine, daily stressors have been associated with anxiety (Bennett et al., 2005) and depression (Bennett et al., 2005; Reti et al., in press). Organisational stressors have also been reported to be more difficult to deal with (Gallagher & McGilloway, 2008), and have a stronger impact on wellbeing compared to operational stressors (Bennett et al., 2005; Kop et al., 1999). Organisational stressors may be experienced as an unexpected and unenjoyable part of ambulance personnel's job, and are therefore more impactful (Reti et al., in press).

Due to the exposure to traumatic events and organisational stressors, and the consequential increase in psychological distress, it is important that research focuses on coping strategies and protective factors for ambulance personnel. Ambulance services are an invaluable part of our communities, therefore identifying protective factors for their health and wellbeing is an important area of research (Reti et al., in press). One of the most widely researched and utilized coping strategies for emergency support workers is social support (Arble & Arnetz, 2017; Prati et al., 2009). A metanalytic review of the relationship between social support and mental health among first responders demonstrated a significant relationship (Prati & Pietrantoni, 2010a). Social support has also been negatively associated with anxiety, burnout, depression and psychological distress with medium to strong effect sizes for disaster responders (Guilaran et al., 2018). For ambulance personnel specifically, social support has been shown to protect personnel from the negative effects of work-related stress (Regehr & Millar, 2007; Donnelly et al., 2015) and the effects of traumatic events and PTSS (Kohler et al., 2018). Therefore, social support is an important coping strategy for ambulance personnel.

Social support in its broadest definition is considered to be resources provided by others (Cohen & Syme, 1985). Two types of social support are perceived and received support. Perceived support is often defined as the cognitive appraisal of being reliably

connected with others (Barrera, 1986), and by the belief that supportive functions are available if needed (Wills & Shinar, 2000). Received support, is defined as supportive functions that are reported to be recently provided (Wills & Shinar, 2000). It has been suggested that perceived social support acts as a resilience factor in the face of distress (Prati & Pietrantoni, 2010a). A popular explanation of how social support acts as a resilience factor is based on the perception that other people can and will provide support when necessary (Cohen & Wills, 1985). Thus, although received support has been shown to be related to wellbeing among first responders (Prati & Pietrantoni, 2010a), perceived support is often considered to have a stronger relationship with wellbeing, when compared to received support (Haber et al., 2007; Nurullah, 2012).

In addition to the type of support, whether perceived or received, it is also important to consider the source of support. Research that has focused on sources of support for first responders has suggested that supervisors are an important source of support in protecting against work-related stress (Halpern et al., 2012; Kohler et al., 2018). Other non-work supports such as spouse/partner, family and friends are consistently recognised as supportive and helpful (Alexander & Klein, 2001; Regehr et al., 2002; Donnelly et al., 2016). Different sources of support may be more helpful in different types of situations because there is some evidence suggesting that the content discussed with different sources of supports differs for first responders (Cydulka, 1989). For example, first responders may feel unable to discuss some traumatic parts of the job with their spouse if they are not also involved in health care (Cydulka, 1989), in order to protect them from secondary traumatic stress or vicarious trauma (Regehr, 2005). Thus, a range of supportive sources has been identified as protective against work-related stress (Shepherd & Hodgkinson, 1990; Regehr & Millar, 2007). Importantly, confiding in others has been recognised to be the most

protective aspect of social support against depression (Choi et al., 2020), and so identifying these sources that ambulance personnel can confide in is important.

A specific consideration in terms of the recipient of social support is gender. Females are generally regarded as having more sources of support compared to males (Szkody & McKinnery, 2019), and it is recognised that social support is more strongly related to females' wellbeing (Crevier et al., 2014). Thus, it is likely that gender acts as a moderator of social support.

Although research has focused on social support for first responders, there is limited research on social support for ambulance personnel. Thus, the current study aims to investigate the impact of social support on psychological distress in New Zealand ambulance personnel, with a particular focus on organisational stress, traumatic exposure and gender. Specific hypotheses for this research are:

Hypothesis 1: Social support will moderate the positive relationship between traumatic exposure and PTSS, in that social support will decrease the effect of traumatic exposure on PTSS.

Hypothesis 2: Social support will moderate the positive relationship between organisational stress and depression in that social support will decrease the effect of organisational stress on depression.

Hypothesis 3: Social support will be negatively associated with psychological distress.

Hypothesis 3a: Perceived support will have a stronger relationship with psychological distress than received support.

Hypothesis 4: Spouse/family support will be the strongest supportive source for ambulance personnel.

Hypothesis 5: Gender will moderate the negative relationship between social support and psychological distress, in that the effect of social support on psychological distress will be stronger for females.

Method

Participants

A sample of 125 Wellington Free Ambulance staff participated, consisting of Paramedics (61%), Communications staff (17%), Headquarters staff (15%), Patient Transfer Officers (4%) and Events staff (3%). The age range was from 23 to 64 (M = 37.99, SD = 10.66). Years of experience at Wellington Free Ambulance ranged from under one year to 37 years (M = 8.49, SD = 6.64). Sixty two percent of staff were female and 38% were male (numerically coded as 0 for male and 1 for female). Most participants were in a relationship, either married or civil union (49.2%) or in a de facto relationship (30.6%). The majority of participants were New Zealand European/Pākehā (87%), and as a result of this, ethnicity was grouped into two categories: New Zealand European (numerically coded as 1); and non-New Zealand European (numerically coded as 0). Seventeen percent of participants were single and 3.2% divorced or separated. Participants were largely qualified, with 22% holding a trade or professional certificate or diploma, 46% with a university degree or diploma and 23% with a postgraduate degree or diploma. Nine percent had National Certificate of Educational Achievement (NCEA) Level 1, 2 or 3, which is the national qualification for secondary school in New Zealand. Most participants lived with at least one other person, with 33.6% residing with one other member, 21% with two other members, and 37.4% with three or more other members. The remaining 8.4% of participants lived alone. All participants reported exposure to at least one traumatic event. There are approximately 330 staff members employed by Wellington Free Ambulance, resulting in a response rate of 38%.

Measures

Traumatic exposure. Traumatic exposure was measured by the Life Events Checklist 5 (LEC-5; Weathers et al., 2013). The LEC-5 is a 17-item measure of exposure to potentially traumatic events. Respondents are required to indicate if they have experienced an event either: directly; witnessed it; learned about it happening to close friend or family member; or experienced it as part of their job. The LEC-5 is considered very similar to the original Life Events Checklist (LEC) due to minimal revisions, so psychometric properties for the original LEC are expected to be applicable for the LEC-5 as well. Psychometric properties for the LEC demonstrate good temporal stability and convergent validity (Gray et al., 2004). Based on previous research with the same population, only the direct experience of traumatic events was shown to relate to psychological distress (Reti et al., in press), thus direct trauma was used for this research as well, which includes all items endorsed in the directly experienced type of the LEC-5.

Participants were also asked to name their most distressing event and invited to provide as much or as little detail as they wanted.

Organisational stress. Organisational stress was measured by the subscale 'Communication', from the Police Daily Hassles Scale (PDHS: Hart et al., 1993), which is used to assess the negative work experiences police officers experienced on a daily basis. This measure is deemed appropriate for use with other emergency service personnel (A. Hart, personal communication, January 11, 2018). The Communication subscale consisted of six items. Internal consistency coefficients were reported as excellent for the whole scale as well as individual subscales, with a coefficient of .88 for Communication (Hart et al., 1993). The Cronbach's Alpha for the current sample was $\alpha = .87$.

Psychological distress. Psychological distress was measured as PTSS and depression.

PTSS. PTSS was measured with the Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013), which is a 20-item self-report measure. The PCL-5 assesses the 20 symptoms of PTSD according to the fifth edition of the diagnostic and statistical manual of mental health disorders (DSM-5: American Psychiatric Association; APA, 2013) in relation to the experience of one specific traumatic event. It has strong psychometric properties, including excellent internal consistency, test-retest reliability, convergent validity and discriminate validity (Belvins et al., 2015). The PCL-5 can be used to indicate the presence of symptoms consistent with PTSD (Weathers et al., 2013). The Cronbach's Alpha for the current sample was α = .96.

Depression. Depression was measured by the Patient Health Questionnaire 9 (PHQ-9; Kroenke et al., 2001), a nine item self-report measure of depression, which targets depression according to the DSM-5 criteria. Internal reliability and convergent validity have been reported as excellent (Kroenke et al., 2001; Lowe et al., 2004). The PHQ-9 can be used to indicate the presence of symptoms consistent with a Major Depressive Episode, as per the DSM-5 (APA, 2013), as well as indicate severity of symptoms (Kroenke & Spitzer, 2002). The Cronbach's Alpha for the current sample was α = .90.

Social support. Social support was measured by scales measuring received support and perceived support.

Received support was measured by the Inventory of Socially Supportive Behaviours, Short Form (ISSB; Barrera et al., 1981). The ISSB is a 19-item scale derived from the larger 40-item ISSB. It measures how often respondents receive various examples of social support during the preceding month. Strong psychometric properties have been reported (Barrera & Baca, 1990; Barrera & Ainlay, 1984). The Cronbach's Alpha for the current research was α = .88.

Perceived support was measured by the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) and the Social Support Scale (Caplan et al., 1975). The MSPSS is a 12-item, brief self-report measure which subjectively assesses social support from three sources: family, friends and significant other. The perceived support ratings are made on a 7-point Likert scale ranging from "very strongly disagree" to "very strongly agree". The MSPSS produces a total score, which is described as a useful measure of overall functioning and well-being (Osman et al., 2014). Strong psychometric properties have been reported (Zimet et al., 1988; Zimet et al., 1990). The Cronbach's Alpha for the current research was $\alpha = .95$.

The Social Support Scale has four items which assess support from supervisor, colleagues and spouse/family. These four items assess the perceived emotional and instrumental support respondents believe they receive from supervisors, colleagues and spouse/family. Strong psychometric properties have been reported for the scale (Beehr et al., 1990; Kaufmann & Beehr, 1989). The total scale's Cronbach's Alpha for the current research was $\alpha = .88$. Supervisor support, spouse/family support and colleagues support are measured on the same scale, and therefore higher mean scores indicates the source perceived to provide the most support. This scale was used descriptively, to investigate which of the main sources of support for first responders, are perceived to be the most supportive.

Procedure

Ethical approval was obtained from the Massey University Ethics Committee in January 2018 (Application 17/57). The research proposal was presented to Wellington Free Ambulance's Wellaware Advisory Committee. A draft survey version was pilot tested with key groups and adjusted according to feedback received. The final version of the survey was then accepted by the Committee and went online on 23 May 2018 for three months.

The survey consisted of 101 items and took approximately 20-30 minutes to complete. Participants were provided with a Participant Information Sheet prior to completing the survey and were given the option of receiving a summary of results upon completion. Participants could also opt in to be entered into a prize draw to win one of 12 $40 grocery vouchers as a token of researchers' appreciation for completing the survey.

Statistical analysis

SPSS version 25 was used to conduct statistical analyses. A power analysis indicated that a total sample of 108 participants would be needed to detect medium effect sizes ($f2 = 0.15$), with 80% power, with alpha at .05. Hierarchical regression analyses with interaction terms were computed to test the hypotheses by controlling for demographic variables and testing for the added value of the independent variables (Field, 2018). A separate hierarchical regression analysis for each psychological distress variable (PTSS and depression) was completed. Relevant demographic control variables were included in step 1. Independent variables including social support, organisational stress and direct trauma were added in step 2. At step 3, interaction terms (the product of multiplying relevant IVs) were included. Centering of variables for moderation analysis was not performed as it rarely impacts the data (Jose, 2013). To test hypothesis 1, the interaction terms of direct trauma by perceived support and direct trauma by received support were entered, and to test hypothesis 2, the interaction terms of organisational stress by perceived support and organisational stress by received support were entered. To test hypothesis 5, the interaction terms of gender by perceived support and gender by received support were entered. Assumptions of linearity, normal distribution, no outliers, multicollinearity, homoscedasticity and adequate sample size were all satisfied for correlation and regression analyses.

Results

Descriptives

Table 6.1 presents the descriptive statistics for variables. Spouse/family was perceived as the highest provider of support (M = 16.45, SD = 3.66). Colleagues were perceived as providing the second highest level of support (M = 12.27, SD = 4.05), and the least supportive source was supervisor (M = 11.41, SD = 4.78). Spouse/significant other was also reported as the perceived most supportive score according to the MSPSS (M = 29.32, SD = 7.01), followed by family (M = 21.26, SD = 5.81), and friends were considered the least supportive (M = 20.70, SD = 5.75). In terms of received support, the most endorsed type of support received from others on the ISSB was emotional support (M = 19.90, SD = 7.42), followed by guidance (M = 13.14, SD = 4.30), and the least was assistance (M = 7.45, SD = 3.16).

Table 6.2 presents the Pearson r correlations for variables included in this study. Depression showed associations with gender, organisational stress, direct trauma and perceived support, and PTSS showed associations with gender, organisational stress and direct trauma. Perceived support was moderately correlated with received support, supervisor support, colleague support and spouse/family support. Received support was correlated with supervisor support and spouse/family support.

Table 6.1.
Descriptive information for variables

	Mean	Range	Standard deviation
Depression	6.38	21	5.47
PTSS	16.40	66	16.52
Organisational stress	13.28	30	7.58
Direct trauma	4.18	11	2.44
Received support	43.23	57	12.82
Perceived support	65.70	70	15.16
Supervisor support	11.41	16	4.78
Colleague support	12.27	16	4.05
Spouse/family support	16.45	16	3.66

Table 6.2.
Correlation matrix for research variables

	Role	Job length	Age	Gender*	Ethnicity*	Quals	Marital status*	House members	Depression	PTSS	Organisational stress	Direct trauma	Received support	Perceived support	Supervisor support	Colleague support
Role	–															
Job length	-.15	–														
Age	.13	.57**	–													
Gender	.13	-.15	-.13	–												
Ethnicity	.13	-.02	.06	-.01	–											
Quals	-.12	-.02	-.20*	.00	.08	–										
Marital status	-.07	.02	-.05	.07	.00	.04	–									
Household numbers	.00	-.04	.06	-.05	-.01	.15	-.09	–								
Depression	-.09	-.06	-.03	.25**	-.21*	.02	-.08	-.03	–							
PTSS	-.13	-.18*	-.19*	.30**	-.16	.00	-.14	.05	.68**	–						
Organisational stress	-.18*	.01	-.03	.06	-.12	.09	.04	-.03	.32**	.26**	–					
Direct trauma	-.10	.02	.09	-.08	.03	.01	-.15	.08	.18*	.18*	.08	–				
Received support	.14	-.19*	-.18	.12	.04	.10	.11	-.15	.04	.12	.08	.17	–			
Perceived support	.08	-.09	-.14	.07	.09	.07	-.03	-.09	-.34**	-.15	-.04	.04	.40**	–		
Supervisor support	.13	-.20*	-.21*	.06	.01	.08	-.10	-.19*	-.15	-.08	-.42**	-.06	.25**	.43**	–	
Colleague support	-.08	-.02	-.05	.06	-.07	.11	-.08	.14	-.28**	-.14	-.20*	-.04	.23*	.32**	.43**	–
Spouse/Family support	.12	-.08	-.10	.08	.04	.12	-.01	.05	-.28**	-.16	.01	-.01	.53**	.55**	.21*	.32**

Note. Correlations with categorical variables Gender*, Ethnicity* and Marital status* are included as they met all required assumptions for inclusion in Pearson's r correlations
* $p < 0.05$ ** $p < 0.01$
Quals = qualifications, PTSS = posttraumatic stress symptoms

Social support does not moderate direct trauma and PTSS

The results of the hierarchical regression analysis for PTSS are presented in Table 6.3. Gender, age and ethnicity were entered in step 1. This step significantly explained 12.6% of variance in PTSS, F(3, 107) = 5.14, p = .010). At this step, only gender (B = .25, p = .007) was a significant predictor. Direct trauma was added in step 2, and significantly explained an additional 4% of variance, F(4, 106) = 5.28, p = .001). At this step, gender (B = .32 p = .002) remained a significant predictor, with the addition of age (B = -.18, p = .043), and direct trauma (B = .23, p = .026). In step 3, received support and perceived support were added to the model, and significantly explained an additional 6.5% of variance, F(6, 104) = 5.22, p = .000). Age (B = -.20, p = .026), gender (B = .31, p = .001), direct trauma (B = .21, p = .021), and perceived support (B = -.28, p = .004) were significant predictors. In step 4, interaction terms of direct trauma by perceived support and direct trauma by received support were entered and offered no additional significant predictive capacity. Social support did not moderate the relationship between direct trauma and PTSS.

Table 6.3
Hierarchical regression of PTSS scores on direct trauma and interaction terms, while controlling for demographic variables (n = 125)

		Unstandardized Coefficients		Standardized Coefficients
Model		B	Std. Error	Beta
1	(Constant)	13.96	7.47	
	Age	-.25	.13	-.17
	Gender	7.97	2.89	.25**
	Ethnicity	-1.30	.83	-.14
2	(Constant)	7.30	7.90	
	Age	-.26	.13	-.18*
	Gender	9.10	2.88	.29**
	Ethnicity	-1.37	.82	-.15
	Direct trauma	1.29	.57	.20*
3	(Constant)	19.27	9.76	
	Age	-.29	.13	-.20*
	Gender	9.79	2.82	.31**
	Ethnicity	-1.22	.80	-.13
	Direct trauma	1.32	.56	.21*
	Received support	.12	.11	.10
	Perceived support	-.27	.09	-.28**
4	(Constant)	12.13	15.52	
	Age	-.29	.13	-.20*
	Gender	9.48	2.94	.30**
	Ethnicity	-1.26	.81	-.14
	Direct trauma	3.04	2.87	.48
	Received support	.15	.23	.12
	Perceived support	-.17	.21	-.18
	ReceivedSxTrauma	-.00	.05	-.02
	PerceivedSxTrauma	-.03	.05	-.29

Note. R^2 =.13 for Step 1; ΔR^2 = .04 for Step 2 (ps < .026); ΔR^2 = .07 for Step 3 (ps = .014); ΔR^2 = .00 for Step 4 (ps = .828)
* p < .05. ** p < .01
PTSS = posttraumatic stress symptoms

Social support does not moderate organisational stress and depression

The results of the hierarchical regression analysis for depression are presented in Table 6.4. Gender, age and ethnicity (correlates of psychological distress) were entered in Step 1. This step significantly explained 9.7% of variance in depression, F(3, 107) = 3.83, p = .012). Gender (B = .22, p .017), and ethnicity (B = -.22, p = .017) were significant predictors. Organisational stress was added in step 2, and significantly explained an additional 3.7% of variance, F(4, 106) = 4.12, p = .004). At step 2, gender and ethnicity remained significant predictors, with the addition of organisational stress (B = .20 p = .034). At step 3, received support and perceived support were added to the model. This step significantly explained an additional 17% of variance in depression. Gender, ethnicity and organisational stress remained significant predictors, with the addition of perceived support (B = -.45, p = .000). In step 4, interaction terms of organisational stress by perceived support and organisational stress by received support were entered. This step did not significantly add any information to the model, and social support did not moderate the relationship between organisational stress and depression.

Table 6.4

Hierarchical regression of depression scores on organisational stress and interaction terms, while controlling for demographic variables (n = 125)

		Unstandardized Coefficients		Standardized Coefficients
Model		B	Std. Error	Beta
1	(Constant)	3.37	2.59	
	Age	-.00	.05	-.01
	Gender	2.42	1.00	.22*
	Ethnicity	-.70	.29	-.22*
2	(Constant)	1.62	2.67	
	Age	-4.21	.04	.00
	Gender	2.30	.99	.21*
	Ethnicity	-.63	.29	-.20*
	Organisational	.13	.06	.20*
3	(Constant)	9.20	3.20	
	Age	-.02	.04	-.04
	Gender	2.71	.90	.25**
	Ethnicity	-.55	.26	-.18*
	Org	.11	.06	.16*
	Received support	.05	.04	.13
	Perceived support	-.15	.03	-.45**
4	(Constant)	10.54	5.26	
	Age	-.02	.04	-.05
	Gender	2.64	.93	.25**
	Ethnicity	-.60	.27	-.19*
	Org	.04	.28	.05
	Received support	.12	.08	.29
	Perceived support	-.20	.06	-.62**
	ReceivedSxOrg	-.01	.01	-.35
	PerceivedSxOrg	.00	.00	.44

Note. R^2 =.10 for Step 1; ΔR^2 = .04 for Step 2 (ps < .034); ΔR^2 = .02 for Step 3 (ps = .000); ΔR^2 = .01 for Step 4 (ps = .446)

* p < .05. ** p < .01

Social support, psychological distress and gender

The results of the hierarchical regression to predict depression are presented in Table 6.5. At step 1, gender, age and ethnicity (correlates of psychological distress) significantly explained 9.7% of variance in depression, F(3, 107) = 3.83, p = .012). Gender (B = .22, p .017), and ethnicity (B = -.22, p = .017) were significant predictors. Received support and perceived support were added in step 2, and significantly explained an additional 17.9% of variance, F(5, 105) = 8.01, p = .000). At step 2, gender and ethnicity remained significant predictors, with the addition of perceived support (B = 0.47 p = .000). In step 3, interaction terms of gender by perceived support and gender by received support were entered. This step did not significantly add any information to the model, and gender was not a moderator of social support and depression.

Table 6.5

Hierarchical regression of depression scores on social support and interaction terms, while controlling for demographic variables (n = 125)

		Unstandardized Coefficients		Standardized Coefficients
Model		B	Std. Error	Beta
1	(Constant)	3.37	2.59	
	Age	-.00	.05	-.01
	Gender	2.41	1.00	.22*
	Ethnicity	-.70	.29	-.22*
2	(Constant)	10.68	3.15	
	Age	-.02	.04	-.04
	Gender	2.81	.91	.26**
	Ethnicity	-.61	.26	-.19*
	Received support	.06	.04	.14
	Perceived support	-.15	.03	-.47**
3	(Constant)	19.37	6.42	
	Age	-.02	.04	-.05
	Gender	-2.95	3.97	-.27
	Ethnicity	-.59	.26	-.19*
	Received support	-.02	.06	-.04
	Perceived support	-.15	.05	-.45**
	GenderxPerceived	.01	.06	.05
	GenderxReceived	.12	.08	.55

Note. R^2 =.10 for Step 1; ΔR^2 = .18 for Step 2 (ps < .000); ΔR^2 = .03 for Step 3 (ps = .179)
* p < .05. ** p < .01

The results of the hierarchical regression to predict PTSS are presented in Table 6.6. Gender, age and ethnicity were entered in step 1. This step significantly explained 12.6% of variance in PTSS, F(3, 107) = 5.14, p = .010). At this step, only gender (B = .25, p .007) was a significant predictor. Received support and perceived support were added in step 2, and significantly explained an additional 6.5% of variance, F(5, 105) = 4.95, p = .000). In this step, gender remained a significant predictor, with the addition of age (B = -.19 p = .044) and perceived support (B = -.28 p = .005). In step 3, the same interaction terms for

depression were entered; gender by perceived support and gender by received support. This step did not significantly add any information to the model, and gender was not a moderator of social support and PTSS.

Table 6.6

Hierarchical regression of PTSS scores on social support and interaction terms, while controlling for demographic variables (n = 125)

		Unstandardized Coefficients		Standardized Coefficients
Model		B	Std. Error	Beta
1	(Constant)	13.96	7.47	
	Age	-.25	.13	-.17
	Gender	7.97	2.89	.25**
	Ethnicity	-1.30	.83	-.14
2	(Constant)	23.77	9.77	
	Age	-.26	.13	-.19*
	Gender	8.56	2.83	.27**
	Ethnicity	-1.19	.82	-.13
	Received support	.17	.11	.14
	Perceived support	-.27	.09	-.28**
3	(Constant)	13.53	20.19	
	Age	-.28	.13	-.20*
	Gender	16.12	12.48	.51
	Ethnicity	-1.20	.82	-.13
	Received support	.08	.19	.07
	Perceived support	-.16	.14	-.17
	GenderxReceived	.11	.24	.17
	GenderxPerceived	-.19	.19	-.43

Note. R^2 =.13 for Step 1; ΔR^2 = .07 for Step 2 (ps < .017); ΔR^2 = .01 for Step 3 (ps = .611)
* p < .05. ** p < .01
PTSS = posttraumatic stress symptoms

Discussion

Trauma and social support

The first hypothesis, that social support would moderate the relationship between traumatic exposure and PTSS, was not supported. Research generally demonstrates the main effect of social support on psychological distress in the presence of traumatic exposure. For example, social support was protective in the development of PTSS for trauma-exposed individuals (Brewin et al., 2000); showed a main effect on PTSS and general distress for natural disaster survivors (Arnberg et al., 2012); and was an important coping strategy in the face of work-related stressors (Viswesvaran et al., 1999). Social support is also effective for first responders exposed to traumatic events and work-related stress (Prati & Pietrantoni, 2010b). However, some studies report the lack of effect of social support, where social support was not shown to impact PTSS following deployment of a group of male veterans (King et al., 2006) and where a reduction in perceived support was experienced following a natural disaster (Kaniasty & Norris, 1993). Thus, social support, both perceived and received support, appear to have an inconsistent effect on PTSS following traumatic exposure.

A possible explanation for this lack of finding with ambulance personnel may be influenced by group involvement in traumatic events. In a sample of rescue workers, Prati and Pietrantoni (2010a) found that crisis support was lower in cases of high involvement in critical incidents. The authors suggested that rescue workers affected by the critical incident were all experiencing distress and therefore unable to provide support to each other. Likewise, people in close relationships are often distressed by the same stressors, which affects the nature and quality of any support (Heaney & Israel, 2012). Thus, the potential need for support may have exceeded availability of support, especially as high levels of direct trauma were reported in this study. Rather than provide support to colleagues, the

focus is perhaps directed inwards, using available resources to help oneself cope with traumatic events, which reduces the availability of support to others. Alternatively, ambulance personnel may be dissuaded from discussing these events with work supports because of the macho culture of ambulance services which does not emphasise help seeking behaviour (Gallagher & McGilloway, 2009). This reduced availability of support is further complicated by first responders' avoidance of discussing work-related topics with non-work supports as well. Ambulance personnel often avoid sharing their experience of traumatic events with their spouses, family and friends to protect them from secondary traumatic stress (Hyman, 2004; Regehr, 2005; Prati & Pietrantoni, 2010a). Therefore, the combination of reduced social support both at work and at home, may help explain the lack of finding for social support as a moderator of traumatic exposure and PTSS.

Finally, received support has been evaluated negatively when individuals do not perceive themselves as requiring aid (Barrera & Baca, 1990). Individuals with high self-esteem may reject provided support because it is incongruent with their self-perceptions of competence and self-reliance (Barrera & Baca, 1990). It is possible that following a traumatic event, ambulance personnel may reject social support because they believe they should be able to cope with these events, which is influenced by the machismo environment (Regehr et al., 2002) and the stigma of emotional vulnerability and seeking of social support (Halpern et al., 2009). Thus, social support does not act as a moderator for PTSS in the context of traumatic events because it may be viewed as a sign of weakness or incompetence, which could also increase the experience of psychological distress.

Organisational stress and social support

Results also did not support hypothesis 2, that social support will moderate the relationship between organisational stress and depression. However, perceived support was a significant predictor of depression when considering organisational stress. It is possible

that the presence of perceived support, and therefore the altered perception that individuals can adequately manage the perceived stressful situation, results in organisational stressors being perceived as less stressful, and demonstrates a negative relationship with depression.

Social support and psychological distress

Hypotheses 3, that social support will negatively predict psychological distress, was partially supported, as perceived support negatively predicted both depression and PTSS. This is in line with the literature, as perceived support frequently shows health benefits for the general population (Uchino, 2009; Nurullah, 2012) and specifically for first responders (Prati & Pietrantoni, 2010a). Perceived support showed a main effect with the negative relationship with both depression and PTSS, which is in line with other literature (e.g., Uchino, 2009; Prati & Pietrantoni, 2010; Nurullah, 2012). Received support; however, showed no relationship with either PTSS or depression, thus supporting hypothesis 3a, that perceived support would have a stronger effect than received support. It is recognised that not all forms of support are equally related to mental health (Prati & Pietrantoni, 2010a) or have the same positive impacts (Nurullah, 2012). The effects of received support are variable (Uchino, 2009; Melrose et al., 2015), and no effect for received support and psychological distress was found in this study.

One possible explanation for the effect of perceived support on psychological distress may be due to how perceived support is thought to operate. It has been suggested that perceived support prevents negative responses to stressful events through changing the way one views a situation (Cohen et al., 2000). This re-appraisal of the situation is influenced by the perception that others will provide support when necessary (Wills & Shinar, 2000), which results in the situation being perceived as less stressful and increases the perception that one can cope (Cohen et al., 2000). For ambulance personnel in this research, the very perception that others will provide support if and when necessary, seems

to be enough to reduce psychological distress, even if that support is never received, highlighting the importance of perceived support for ambulance personnel.

The explanation for how perceived support results in a re-appraisal of stressful situations and therefore a negative relationship with psychological distress, can also provide some understanding for the lack of finding between received support and psychological distress. Received support is thought to alleviate the impact of a stressful situation through the provision of a solution to the problem or a distraction from the problem (Cohen et al., 2000). Received support concerns the tangible supports provided in relation to a problem, compared to perceived support, which is about the perception that support is available if necessary. It is likely that perceived support is activated before received support, and the knowledge that others will provide support if needed, results in the situation being viewed as less stressful and something individuals can cope with. Thus, with a newly perceived non-threatening situation, there may be no need to receive any support, which removes the opportunity for received support to have an impact. Perceived support may be the first type of support used, and in doing this, reduces the opportunities for any received support. Further research is needed in this area, with longitudinal research seemingly the most appropriate type to investigate possible timing effects of perceived and received support.

Sources of support

Spouse/family members were perceived as the most supportive source of support on both perceived support measures, supporting hypothesis 4, that spouse/family will be the strongest source of support. Spouse/family members was also highly correlated with perceived support, and as perceived support was found to negatively predict psychological distress, it is likely that perceived support from spouse/family members has an impact on psychological distress for ambulance personnel. Spouse/family support was also an important source of support in Regehr et al.'s (2002) study, with the majority of ambulance

personnel stating that their spouses were often or very supportive. Spouse/family members therefore appear to be an important source of support for ambulance personnel and psychological distress.

In addition to spouse/family, it was also predicted that work supports would have a positive impact on ambulance personnel's health, as paramedics frequently report a preference for collegial support (Regehr et al., 2002; Regehr & Millar, 2007; Donnelly et al., 2016). Support from colleagues has been reported as helpful due to such benefits as sharing jokes and tales with each other (Regehr et al., 2002) and the supportive and trusting interactions they share (Regehr & Millar, 2007). In this study, colleagues were perceived to be the second most supportive source of perceived support.

Both colleague and spouse/family support were negatively associated with depression in this study, and it may be something about the type of support these sources can offer ambulance personnel, which results in reduced symptoms of depression. Confiding in others was found to be the most important aspect of social support when protecting against depression (Choi et al., 2020), and it may be that for ambulance personnel, confiding in their colleagues and spouse and family members has this effect. Confiding in colleagues can be done both formally and informally, and a type of formal collegial support is peer support. Peer support is an intervention frequently used by first responder organisations, which makes use of the shared and lived experiences of personnel with the goal of fostering wellness (Dobani et al., 2020). Based on the findings from this study, the use of formal peer support, where ambulance personnel can confide in colleagues with similar experiences, appears to be an appropriate method for ambulance personnel to seek support from their preferred work supports.

Finally, the least supportive source of perceived support was supervisors. The literature demonstrates mixed effects of supervisor support, where some studies show

positive effects of supervisor support on health (e.g., Revicki & Gerhson, 1999; Pisarski et al., 2002; Brough, 2005), while others show negative effects (e.g., van der Ploeg & Kleber, 2003; Regehr & Millar, 2007; Donnelly et al., 2016). Supervisor support was considered the least supportive source of support in this study, and it may be that ambulance personnel are reluctant to ask supervisors for support because this can make them feel vulnerable (Gleason & Iida, 2015). As supervisors were perceived to be the least supportive source of support, it warrants further investigation into how supervisor support differs from spouse/family members and colleagues, in order to increase the presence and effectiveness of supervisor support, as some research shows that supervisor support is particularly important for ambulance personnel (Halpern et al., 2012: Kohler et al., 2018).

Gender and social support

The results did not support hypothesis 5, that the effect of social support on psychological distress will be stronger for females. This was surprising as a previous study with the same sample showed gender differences in psychological distress levels, in which females reported less distress in the context of operational stressors (Reti et al., in press). However, it is important to highlight that gender was a significant predictor in each regression analysis, and although gender may not moderate social support and psychological distress, it remains a significant predictor of psychological distress for ambulance personnel.

In this research, both female and male ambulance personnel benefited equally from social support, suggesting that male ambulance personnel may experience greater benefits of social support than males in other contexts where gendered differences in sources and perceptions of support have been observed (Crevier et al., 2014; Szkody & McKinnery, 2019). These occupational differences deserve further investigation with the aim of identifying the cultures that can support both males and females.

Limitations and future directions

There are several limitations to consider. Concerning the sample characteristics, the number of participants was relatively small and there was an uneven distribution of males and females, which is limiting considering hypothesis 5, which focused on gender.

In terms of the specific measures, while each of the measures were selected because they were considered the most suitable for the intended purpose, it is recognised that they do still have their limitations, and it is possible that there may be an issue with the measures used. It is recognised that there is no gold standard measure for social support, as well as no agreed upon definition of social support. Reaching a consensus on the definition and developing an appropriate measure for social support will be valuable in furthering research focused on social support.

In addition, measuring perceived support is recognised as being somewhat of a challenge, as it is often influenced by mood states participants are experiencing when completing the survey (Procidano & Heller, 1983). Thus, those individuals experiencing symptoms of depression or PTSS may have been influenced by these symptoms and given inaccurate responses, particularly on the perceived support measure. The experience of psychological distress may have resulted in inaccurate reporting, which could be addressed in the future by the inclusion of other sources and their perspective of providing support.

With regards to sources of support, a possible future area of research concerns ambulance personnel's spouses and supervisors. This research showed spouse/family as being the highest perceived provider of support; however, paramedics often feel unable to discuss traumatic incidents with their spouses (Cydulka, 1989), which is likely due to wanting to protect their spouses from the information. Importantly, the disclosure of traumatic events is more likely when common experiences between the teller of the trauma and the listener are shared (Hoyt et al., 2010). Thus, it is possible that if ambulance

personnel's spouses are also first responders, they may be more likely to disclose their experience of traumatic events, and therefore have increased access to social support. Investigating the effects of ambulance personnel's spouses' professions could be an important area of research to further understand how families and organisations can best support ambulance personnel, especially as spouse/family were rated as the most supportive source. Similarly, further research that investigates peer support programs and how supervisors can increase their effectiveness in providing support to ambulance personnel is an important area to examine.

In terms of gender, this study found that male ambulance personnel significantly benefited from social support, in line with the benefits female ambulance personnel experienced. Research into what work-related factors differ for male ambulance personnel, compared to other occupational contexts is important, with the aim of identifying work cultures that can support both males and females.

Finally, research focusing on social support in ambulance personnel is still relatively scarce, and should therefore be a continued focus of future research, as multiple studies, including the current one, show the benefits which social support can provide. Inclusion of considerations to important differences between ambulance personnel and other occupations is also likely to be a valuable future direction.

Conclusion

The current findings suggest that social support associates with psychological distress for New Zealand ambulance personnel, although unexpectedly, gender was not a moderator of this relationship. Perceived social support showed a significant negative relationship in predicting both depression and PTSS, which is in line with the literature. Perceived social support showed a stronger relationship with psychological distress than received social support, which has also been demonstrated in the

wider first responder population. It was considered that the presence of perceived support alters the perception of the stressful situation where the individual then believes they are able to cope with the situation. This results in the reduced need for received support because there is no perceived stressful situation anymore. Spouse/family members were perceived as the most supportive source, and supervisors as the least supportive. Social support did not moderate the impact of organisational stress on depression, or the impact of direct trauma on PTSS. High involvement of work-supports with traumatic events and the inability to discuss traumatic work-related events with non-work supports can potentially help explain the lack of finding between the impact of social support on direct trauma and PTSS. These findings contribute to the small but increasing research for ambulance personnel, with a specific focus on social support in New Zealand ambulance personnel. More research is needed with a focus on increasing the accuracy of social support measures, identifying work cultures that support both male and female ambulance personnel, and investigating ways in which supervisors can best offer support as well as how spouse/family members can be supported in their support of ambulance personnel.

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GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Tayla Reti
Name/title of Primary Supervisor:	Dr Ian de Terte
In which chapter is the manuscript /published work:	Chapter 6

Please select one of the following three options:

◯ The manuscript/published work is published or in press

Reti, T., de Terte, I., & Stephens, C. (2021). Traumatic exposure, work-related stressors and gender as risk factors in the development of psychological distress for ambulance personnel. Traumatology. Advance online publication. https://doi.org/10.1037/trm0000315

◯ The manuscript is currently under review for publication – please indicate:

- The name of the journal:

Traumatology

- The percentage of the manuscript/published work that was contributed by the candidate:

- Describe the contribution that the candidate has made to the manuscript/published work:

The candidate is responsible for the work put into this manuscript (e.g., design, analysis and write up) and the supervisors have contributed to the manuscript in the same way that they have contributed to the chapters in a traditional thesis: by providing guidance and feedback.

◯ It is intended that the manuscript will be published, but it has not yet been submitted to a journal

Candidate's Signature:	Tayla Digitally signed by Tayla Date: 2021.03.05 09:43:37 +13'00'
Date:	05.03.21
Primary Supervisor's Signature:	Ian de Terte Digitally signed by Ian de Terte Date: 2021.03.05 15:33:44 +13'00'
Date:	5-Mar-2021

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Chapter Seven:

Discussion and conclusion

This thesis provides the first exploration of New Zealand ambulance personnel's work-related stressors, risk factors for psychological distress and the impact of social support. An overview of the main findings is presented first, followed by results of the five overarching research questions. Figures developed from these findings are then presented. Possible interventions based on these findings are discussed, followed by limitations of this research and areas for future research. This chapter concludes with a chapter summary.

Overview of main findings

This thesis showed the impact work-related stressors have on New Zealand ambulance personnel's psychological distress levels, and the importance of perceived social support. Compared to operational stressors, direct traumatic exposure and organisational stressors were more significant in predicting psychological distress. Perceived social support was a protective factor against psychological distress for ambulance personnel, although neither perceived or received support showed a moderator effect for the relationship between organisational stress and depression, or traumatic exposure and PTSS. Spouse/family were perceived as the most supportive source of support, with supervisors considered the least supportive. Gender had a moderating role on the relationship between operational stress and psychological distress; however, social support did not further impact this relationship. These findings will now be discussed in more detail in relation to each individual research question.

1. What are the risk factors for psychological distress for ambulance personnel?

Results showed that direct traumatic exposure, organisational stressors, and male gender were significantly associated with psychological distress. Direct traumatic exposure was associated with PTSS, albeit weakly, which is in line with the majority of the literature showing the connection between traumatic exposure and traumatic symptoms (e.g., Brewin et al., 2000). This association also makes sense, given that the first criterion for diagnosing PTSD is the experience of a traumatic event (APA, 2013). Organisational stressors as risk factors in the development of psychological distress for this sample of ambulance personnel is perhaps more surprising, given these stressors are not perceived as dangerous, and were originally thought to be less associated with psychological distress compared to operational stressors (Bennett et al., 2005). Initially, operational stressors were thought to be the most difficult part of the job (Hart & Cotton, 2001); however, research is more frequently demonstrating that organisational stressors are more challenging (Bennett et al., 2005; Granter et al., 2019). This was also shown in this study, as organisational stressors were a significant predictor of depression. Organisational stressors were not a predictor of PTSS, which again can be made sense of in terms of the DSM-5 criteria for PTSD, where organisational stressors are not considered to be traumatic events. Thus, it would be unexpected that organisational stress had a stronger relationship with PTSS than depression.

The last identified risk factor for psychological distress for ambulance personnel was male gender. This was a surprising finding, as in the general population, female gender usually results in higher levels of psychological distress (Kessler et al., 2005). There have been some studies that have suggested that females working in first responder contexts experience less psychological distress than males (Lilly et al., 2009). This was apparent in this study as well, as compared to males, females experienced less depression and PTSS at higher levels of operational stress. A possible explanation for this finding was thought to be

the presence of differing levels of social support for males and females; however, this was not confirmed by this thesis. Another possible explanation considered was the impact of the "macho" environment. The "macho" environment and machismo culture has been identified as a significant barrier to accessing work supports in ambulance services (Gallagher & McGilloway, 2009; Regehr et al., 2002), and may have had a large impact on the way males manage the presence of psychological distress and their help seeking behaviours. Because operational stressors are a key part of the job, it is possible that male ambulance personnel may feel unable to communicate their feelings, including possible distress, in relation to these, as they believe they are expected to be able to manage them. The machismo culture may stifle any potential adaptive ways of managing psychological distress. This construct of machismo was not investigated in this thesis, but is an important variable to consider in future studies.

Overall rates of psychological distress for ambulance personnel in this study were in line with international rates. Twenty percent of the sample reported symptoms in line with PTSS, which fits into the 0-60% reported for ambulance personnel (Wagner et al., 2020), although is somewhat higher than the pooled prevalence rate of 11% for ambulance personnel reported by Petrie et al. (2018). For depression, 28% of the sample were above the cutoff score of 10 for the PHQ-9, indicating the possible presence of depression, which is also in line with the scientific evidence, fitting into the estimated 6.4-42.9% prevalence (Wagner et al., 2020), although is again higher than the 15% reported pooled prevalence (Petrie et al., 2018).

Rates of exposure to traumatic events for participants in this thesis were similar to the scientific evidence. Based on the Life Events Checklist, Fifth Edition (LEC-5), 100% of participants endorsed the experience of at least one event listed. Eighty eight percent of participants also identified a specific distressing event. These percentages are similar to

research with other ambulance personnel, as illustrated in Chapter 3, where rates of exposure to traumatic events ranged from 71% (Mishra et al., 2010) through to 100% (Halpern et al., 2012; Kohler et al., 2018; Regehr et al., 2002a; Regehr et al., 2002b; Regehr & Millar, 2007).

2. Do perceived and received support have the same impact on psychological distress for ambulance personnel?

Perceived support and received support are widely recognised as being two different constructs of social support (Haber et al., 2007; Maisel & Gabel, 2009; Reinhardt et al., 2006) with a meta-analytic review providing a mild correlation of $r = .35$, $p < .001$ for the relationship between perceived and received support (Haber et al., 2007). This meta-analytic review concluded that it is unlikely that received support is the primary constituent factor in perceived support (Haber et al., 2007). Additionally, studies which have tried to increase perceived support by increasing received support have failed to change levels of perceived support, implying that these are two different constructs (Lakey & Lutz, 1996; Reinhardt et al., 2006).

These two separate constructs were shown to mildly correlate in this study, with a pearson r correlation of $r = .40$, $p < .001$, which is similar to the correlation produced from the meta-analytic review. In contrast to this mild correlation, the hierarchical regression analysis demonstrated a different relationship between perceived and received support and psychological distress. Perceived support was shown to predict both depression and PTSS in this research. This is in line with the literature, where perceived support is recognised as having a stronger and more consistent effect on health compared to received support in the general population (Nurullah, 2012; Uchino, 2009) and with first responders (Prati & Pietrantoni, 2010a). Received support on the other hand has a more mixed and inconsistent effect on mental health (Melrose et al., 2015; Uchino, 2009).

Although it is recognised that received support has an inconsistent impact on wellbeing and mental health, there have been limited arguments proposed to explain this. One possible explanation based on the findings in this study, concerns the timing of perceived and received support. Perceived support is thought to prevent negative responses to stress through the re-appraisal of a stressful situation (Cohen et al., 2000). In the presence of perceived support, individuals perceive the situation at hand to be less stressful because they know that support will be provided if necessary. Similarly, the perception that someone is available if necessary has been suggested to be comforting and enables the person to manage the stressful situation in a "self-reliant fashion" (Reinhardt et al., 2006, p. 119). The very definition of perceived support is the perception that one has support if necessary (Wills & Shinar, 2000) and that one is connected to others (Barrerra, 1986). Perceived support differs significantly from received support, which is defined as supportive functions recently provided (Wills & Shinar, 2000). It was proposed that perceived support is activated before received support, where perceived support reduces the opportunities for the provision of any received support. Because received support can also be conceptualised as the provision of a solution to a problem (Cohen et al., 2000), the presence of perceived support may in fact reduce the perception of a problem and thus reduce the need for any received support.

Another explanation concerns the impact perceived and received support may have on individuals. As explained, perceived support may offer comfort and result in a re-appraisal of a situation, whereas received support may result in negative implications, namely, lowered self-esteem, increased focus on the problem (Maisel & Gabel, 2009), feelings of dependence and becoming a burden (Reinhardt et al., 2006), and changes in beliefs about coping (Marigold et al., 2014). These negative consequences of received

support can help explain the mixed and inconsistent findings for received support and health.

Although these consequences are possible, researchers have identified how to minimize these outcomes and also increase the chance of positive outcomes on health. It has been proposed that considerations to the type, timing, manner of provision and the role of both the provider and receiver of support are important to attend to when thinking about support (Gleason & Iida, 2015). When these considerations are made, support is more likely to achieve the intended purpose of assisting in coping and alleviating distress (Gleason & Iida, 2015). These considerations are also aligned with the importance of fitting the support to the need. It has been suggested that the most obvious reason that received support is ineffective is because it does not meet the recipient's need (Gleason & Iida, 2015). Thus, received support that is not appropriately timed or does not appropriately match the individual's need may result in negative health outcomes. These are two possible explanations of the absence of any received support effect on psychological distress in this study.

3. Does social support moderate the relationship between work-related stress and psychological distress?

Social support was not found to moderate the relationship between work-related stress and psychological distress, specifically, the relationship between organisational stress and depression or the relationship between direct trauma and PTSS. It was considered again that perceived support had an important role to play in these contexts, as perceived support was a significant predictor. The presence of perceived support was thought to result in a re-appraisal of the organisational stressors and direct traumatic exposure, where these were considered less stressful or threatening, and result in a reduction in psychological distress. Received support was not a significant predictor for either depression in the context of

organisational stress, or PTSS in the context of direct traumatic exposure, and this could be explained by the possible effect of receiving support, where receiving support has been demonstrated to increase vulnerability (Gleason & Iida, 2015), lower self-esteem (Reinhardt et al., 2006) and change one's ability of coping (Marigiold et al., 2014). Receiving support had no effect in this study, perhaps because it is either unnecessary and not received altogether, rejected by individuals, or received and results in changes in beliefs about one's competence. Perceived support appears to be more important in predicting psychological distress, however neither perceived or received support moderated the relationship between work-related stressors and psychological distress in this study.

4. What sources of support are perceived to be the most supportive?

In this study, spouse/family, colleagues and supervisors were considered important sources of support for ambulance personnel. Spouse/family were perceived to be the most supportive source on both perceived support measures, followed by colleagues, and lastly supervisors.

Spouse/family members are recognised as being important sources of support for ambulance personnel (Regehr et al., 2002). In this study, they were considered the most supportive source of support and had the strongest pearson r correlations with both received support ($r = .53$, $p < .001$) and perceived support ($r = .55$, $p < .001$). It is considered that the important principle of support reciprocation influences these findings. Support reciprocation is when an individual both receives and provides support to another individual, where the relationship is considered equitable (Gleason & Iida, 2015). This has been shown to reduce the possible negative impacts of received support as individuals are able to avoid being either overburdened or underburdened (Gleason & Iida, 2015). It may be that support reciprocity is easier to achieve with spouse/family members as there are more opportunities to engage in supportive behaviours. Alternatively, it may be easier to give and receive

support from spouse/family members compared to work supports, due to the absence of the possible macho culture at work (Reynolds & Wagner, 2007; Skogstad et al., 2013), as this culture may restrain giving and receiving support, as receiving support has been linked with negative effects such as an increase in vulnerability (Gleason & Iida, 2015) and lowered self-esteem (Reinhardt et al., 2006).

This macho culture has been reported in other studies with ambulance personnel (e.g., Regehr et al., 2002; Reynolds & Wagner, 2007; Skogstad et al., 2013), but was not investigated in this study. However, the fact that both work supports were perceived as less supportive than spouse/family members implies that there may be something happening in the workplace to reduce these sources perceived supportiveness. Colleagues were deemed the second most supportive source, which is in contrast to some research which found colleagues and work partners to be the most supportive source (Regehr et al., 2002; Regehr & Millar, 2007). Interestingly, there was no significant relationship between received support and colleague support as shown in the correlation matrix. It has been reported that failure to recognise the need of support from an individual is more likely to happen when the provider has limited capacity and resources (Gleason & Iida, 2015). It is likely that when a group of ambulance personnel have been affected by a traumatic event and may require support, fellow colleagues may be unable to recognise this need as they too are experiencing the need for support. Thus, colleagues are unable to provide support which can help explain the lack of association between received support and colleague support. Furthermore, this may also welcome the possibility for an evidence-based intervention for first responders to be used to change this lack of finding. Peer support programs may well be the important intervention missing, which could alter these results. Peer supports are colleagues; however, they are more equipped to recognising the need for support and also providing this support, due to extensive training.

Finally, the last source of support considered was supervisors, who were perceived to be the least supportive source. In the literature, the effect of support from supervisors is mixed, with some research demonstrating its positive effects (e.g., Brough, 2005; Pisarski et al., 2002; Revicki & Gerhson, 1999), while others show its negative effects (e.g., Donnelly et al., 2016; Regehr & Millar, 2007; van der Ploeg & Kleber, 2003). It was considered that ambulance personnel may be reluctant to ask supervisors for support because this can make them feel vulnerable (Gleason & Iida, 2015).

All three sources of support were positively associated with perceived support, as shown in the correlation matrix, which suggests that all three sources have a negative effect on psychological distress. Spouse/family support was perceived as the most supportive, with supervisor support perceived the least supportive. Colleague support is beneficial, however more formalized support in terms of peer support may be an important intervention for ambulance services to provide to effectively support ambulance personnel.

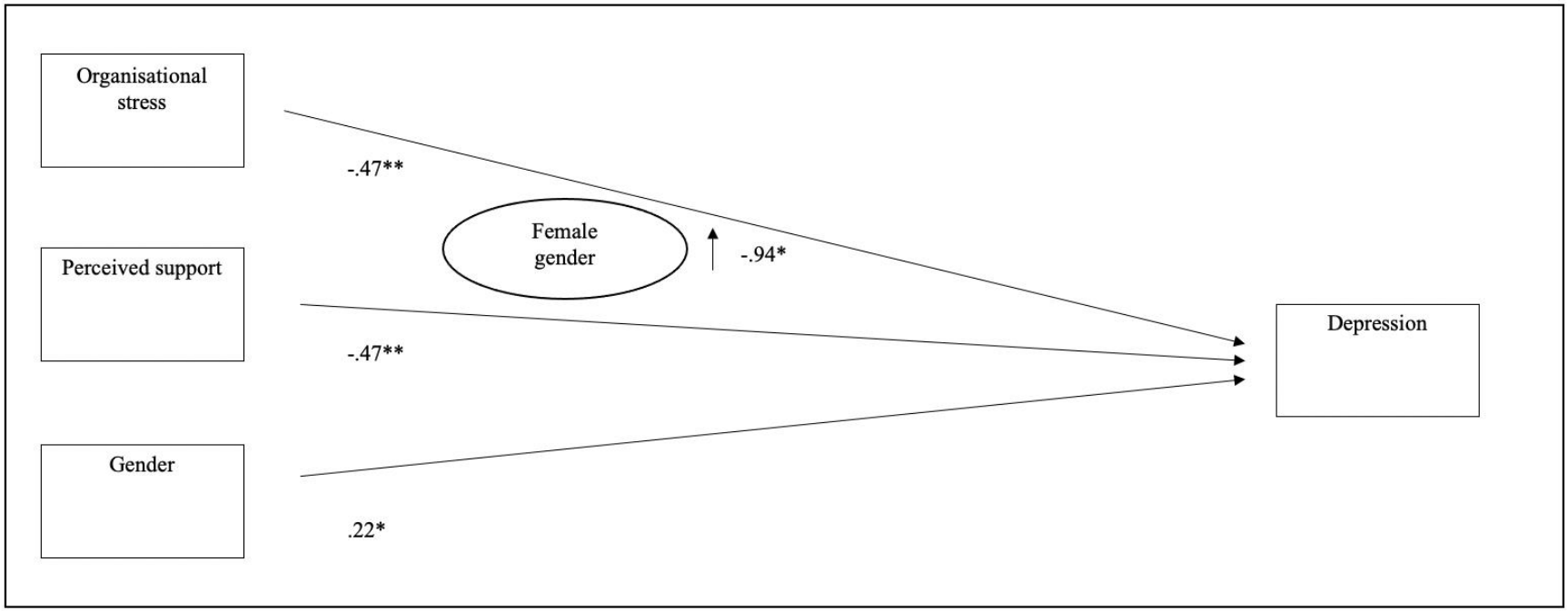
5. Is there a difference between male and female ambulance personnel in terms of risk factors, psychological distress, and social support?

It was expected that female ambulance personnel would have higher levels of psychological distress, based on the fact that females in the general population experience higher levels of psychological distress compared to males (Kessler et al., 2005). However, this was not demonstrated, as compared to males, females experienced reduced psychological distress in the context of operational stressors. It was thus hypothesised that females had increased levels of social support compared to males. However, this was not found in this study. There were no differences between levels of perceived or received social support for males and females. It was instead hypothesised that perhaps male and female ambulance personnel share more similarities rather than differences when it comes to social support, which provides a valuable area of future research.

The findings from these research questions are presented visually in Figure 7.1 and Figure 7.2. On the left are independent variables which directly influence psychological distress variables on the right of the figures. Moderator variables are depicted by circles in the middle of the figures.

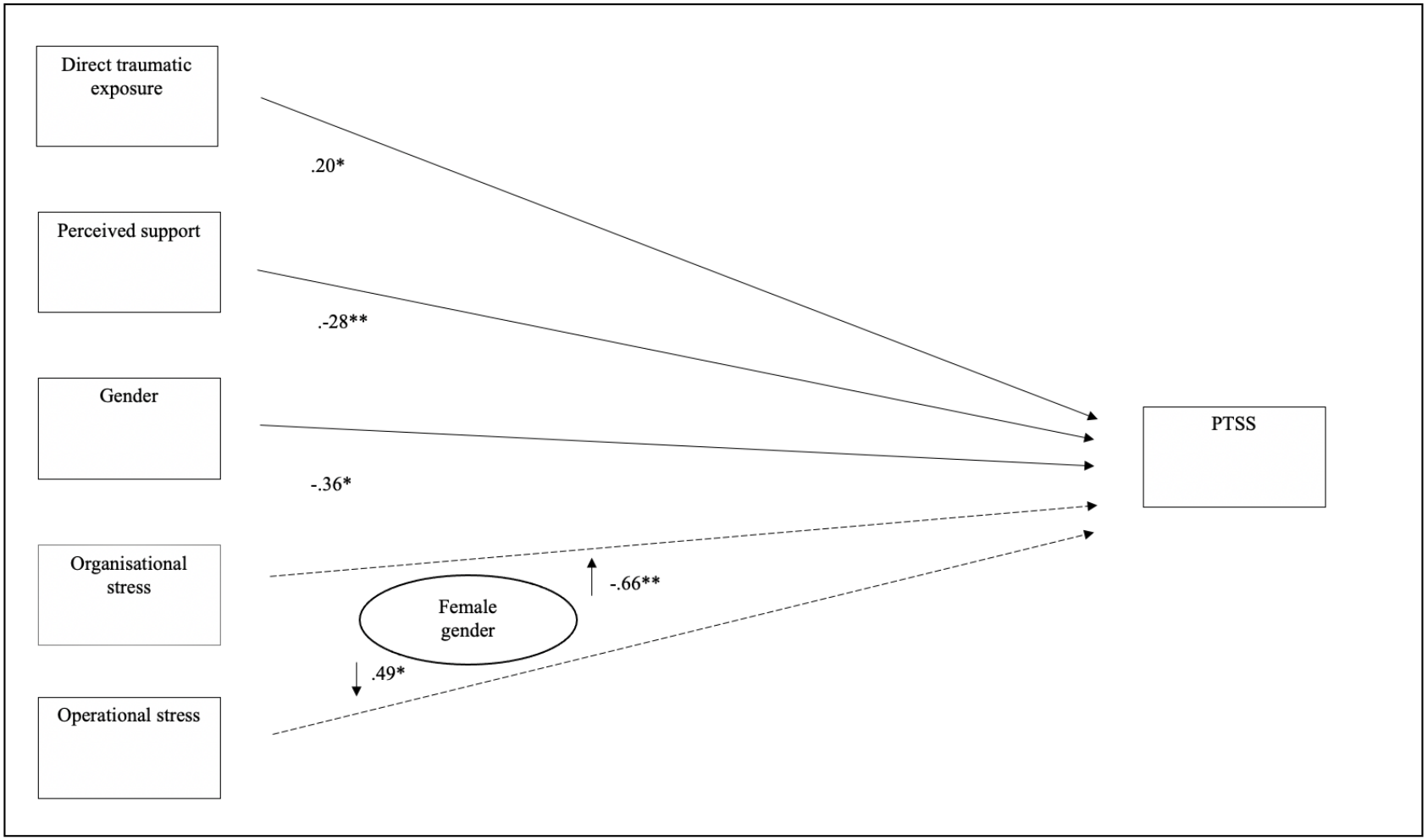
This thesis has provided an understanding of psychological distress, work-related stressors and social support for one of only two ambulance services in New Zealand. Work-related stressors for ambulance personnel were identified, and the importance of organisational stressors brought to the forefront. The experience of traumatic events, and presence of depression symptoms and PTSS for ambulance personnel in this study, are in line with the current literature for ambulance personnel internationally (Wagner et al., 2020). The importance of perceived support in reducing psychological distress for ambulance personnel was highlighted. Finally, the unexpected differences in psychological distress and the similarities in social support between male and female ambulance personnel, provided a deeper understanding of the role of gender in ambulance personnel, while also providing some key directions for future research.

Figure 7.1
A visual depiction of the impact of predictor and moderator variables on depression



Note. This figure demonstrates the impact of work-related stressors, social support and gender on depression. Arrows indicate significant regression results with the coefficient stated underneath the line. Variables in a circle indicate moderator variables, and the strength is shown next to the arrow.

Figure 7.2
A visual depiction of the impact of predictor and moderator variables on PTSS



Note. This figure demonstrates the impact of work-related stressors, social support and gender on PTSS. Bolded arrows indicate significant regression results with the coefficient stated underneath the line. Broken arrows indicate a lack of regression results, but are necessary to depict the moderated relationship. Variables in a circle indicate moderator variables, and the strength is shown next to the arrow.

Interventions

Although there is research identifying levels of psychological distress for first responders, there is a paucity of research focused on interventions to reduce this distress (Alden et al., 2020). This lack of research is even more prevalent for ambulance personnel, as most of the literature for interventions for emergency services targets police (Alden et al., 2020; Malek et al., 2003). This lack of research is illustrated by a recent review of empirical research evaluating the effectiveness of psychological interventions for PTSS in first responders, where only one of the 21 articles included ambulance personnel (Alden et al., 2020). This dearth of research is further illustrated by two literature reviews focusing on interventions for ambulance personnel, with Smiths and Roberts (2003) identifying 10 relevant articles, and Wild et al. (2020) identifying 13 articles. Of Smith and Roberts 10 articles, only four discussed one type of intervention; critical incident stress debriefing (CISD). Both reviews stated that the reviewed stress management interventions were largely unhelpful (Smith & Roberts, 2003; Wild et al., 2020). A broader first responder review found support for the effectiveness of trauma-focused psychotherapy in reducing PTSS, although this was not specific to ambulance personnel (Aldern et al., 2020).

In focusing on interventions that did show improvement in mental health symptoms, Wild et al. (2020) found that interventions which identified and targeted the modifiable risk factors for poor mental health were the most effective. Interventions involving physical activity, with the prescription of anaerobic and aerobic exercise, and imagery, targeting behavioural disengagement, appeared to have the largest benefits in reducing psychological distress for ambulance personnel (Wild et al., 2020). This compared to other interventions which did not target modifiable risk factors (for instance, self-regulation interventions and debriefing), and were not linked to any improvements in health. Based on the clear increased effectiveness when targeting risk factors, Wild et al. (2020) recommended that a

systematic approach to intervention development is needed. This approach must begin with identifying modifiable risk factors and then developing appropriate interventions to modify these risks (Wild et al., 2020). As shown in this research, potential modifiable risk factors in the development of psychological distress for ambulance personnel include direct traumatic exposure and organisational stressors. Developing appropriate interventions aimed at reducing these two risk factors is likely to be an important starting point in interventions research for ambulance personnel.

Stages of interventions

Interventions can be categorised by their stage (primary, secondary and tertiary), and implementation level (individual or organisational). The goal of the primary stage is to identify and reduce stressors, whereas in the secondary stage, ambulance personnel exposed to stress or who are exhibiting symptoms of stress are targeted, and the goals of the tertiary stage includes treatment, management and support of individuals with symptoms (Reynolds & Wagner, 2007). It is noted that the most effective intervention approach is one that is multifaceted and comprehensive and acknowledges different sources of stress in order to avoid a myriad of psychological and physical problems for first responders (Reynolds & Wagner, 2007). First responder services are recognised as relying predominantly on individual-based primary and secondary strategies, and organisational-based secondary strategies (Brunsden et al., 2012). Reynolds and Wagner have proposed a best practice, multidimensional approach to stress management interventions across all stages, which is outlined below.

The primary stage of interventions is considered the proactive “stressor-directed” stage, aimed at eliminating or reducing exposure to stressors (Reynolds & Wagner, 2007). At the individual level, education, stress inoculation and adequate pre-incident training are considered primary stage interventions. At the organisational level, activities include

educational initiatives which target the recognition of stressors and use of appropriate coping strategies and the assessment and modification of organisational factors which contribute to stress. The assessment of organisational influences can provide valuable information about how to direct organisational change to reduce stress and also act as a baseline measurement to compare the effects of any interventions to.

Interventions in the secondary stage involves detection and management of stress. At the individual level these include addressing individual's responses to stress and providing peer supports. At the organisational level, activities such as ensuring support mechanisms are in place and continuing the use of adequate communication, support individuals to use appropriate coping skills following exposure to stress. The implementation of peer support is also considered a secondary stage intervention (Reynolds & Wagner, 2007).

Finally, tertiary interventions have the main focus of the provision of departmental support, adequate communication, and timely access to appropriate therapy and mental health services. With an holistic stress management approach which considers all three stages of intervention, significant improvements in stress levels and overall health of first responders is achievable (Reynolds & Wagner, 2007).

Application of interventions

There is limited published research focusing on interventions with ambulance personnel, and the research studies available are reported to have methodological limitations, prompting the call for good quality research (Smith & Roberts, 2003; Wild et al., 2020). However, Alden et al. (2020) reported that there has been an increase in Randomised Control Trials (RCT) over the last few years, suggesting a growing awareness of the need for controlled outcome evaluations. Although the continued increase in RCT will improve intervention research dramatically, it is still currently difficult for ambulance

services to identify and implement the most appropriate intervention for their service, due to the limited valid and reliable evidence of these. However, based on the findings from this research, there are some recommendations that can be made.

Effective interventions were found to have targeted modifiable risk factors (Wild et al., 2020). This research shows that organisational stressors and direct traumatic exposure were two major modifiable risk factors for psychological distress. Thus, these two risk factors should be identified in the primary stage of interventions, and appropriate coping strategies identified and encouraged by the organisation. This research also showed that perceived support had a significant effect on psychological distress, and that spouse/family support was the strongest source of perceived support. Thus, the use of spouse/family support should be advocated for by organisations as an appropriate and effective coping strategy, while also recognising the importance of supporting spouse/family members. However, it is also recognised that relying only on the support from spouse and family members is inadequate due to the possibility of ambulance personnel's friends and family experiencing vicarious trauma (Lawn et al., 2020; Regehr, 2005). Thus, additional secondary and tertiary level interventions are also needed alongside these primary stage interventions.

At the secondary stage, organisations are expected to ensure support mechanisms are in place and that individuals use appropriate coping strategies (Reynolds & Wagner, 2007). The implementation of peer support services is considered a secondary stage intervention and could be an effective strategy based on this research, as overall, colleagues were rated as the second most supportive source of perceived support. In Lawn et al. (2020), ambulance personnel's wellbeing was reviewed, and the importance of positive working relationships with colleagues and supervisors for mental health was identified. Organisations may also be able to support ambulance personnel by providing supervisors

with appropriate support training, so they are able to support their staff members well. Supervisor training in stress management is considered essential to the wellbeing of ambulance personnel (Lawn et al., 2020). Another supportive secondary intervention may be the direct support to ambulance personnel's families. As spouse/family members were considered the most supportive source, it will be beneficial if families are able to be supported in their support of ambulance personnel.

Finally, at the tertiary stage, supporting ambulance personnel's access to appropriate services is an important ongoing intervention. Although this research did not focus on professional mental health services, there has been some research which shows they are a valued and beneficial component of interventions (Donnelly et al., 2016; Regehr & Millar, 2007).

Peer support

It is not within the scope of this thesis to outline all of the various types of interventions. Instead, peer support, a commonly used intervention with first responders, and one that is recommended based on the findings of this study, will be discussed. Peer support is considered to be an appropriate intervention to focus on because colleagues were perceived to be the most supportive work source, and considering how collegial support can be developed and maintained is important. Furthermore, the absence of a relationship between colleague support and received support results in an opportunity to alter these findings, where peer support enters as a type of received support.

Peer support is those with similar backgrounds relating to one another in a way that supports authentic empathy and validation, with the goal of fostering wellness and health (Dobani et al., 2020; Mead & Macneil, 2006). Workers own lived experiences and recovery stories are used to provide guidance and support to others in similar situations (Dobani et al., 2020). Peer support has demonstrated success in decreased substance use and

depression; increased hopefulness and engagement with providers; and increased self-care and a sense of well-being (Chinman et al., 2010).

The process of becoming and maintaining a role as a peer support worker includes an extensive selection process, followed by comprehensive training and ongoing supervision (Dobani et al., 2020). Core concepts covered in the training include: communication; counselling; knowledge of one's own experience with loss and grief; knowledge of stress, PTSD, acute stress disorder, and critical incidents; knowledge of shiftwork and healthy approaches to shiftwork; knowledge of suicidal behaviour; and knowledge of confidentiality and ethical behaviour as a peer support worker. The key roles of a peer support worker are providing direct services and support to ambulance personnel, advocating on ambulance personnel's behalf and connecting them to professional services (Dobani et al., 2020).

Peer support workers are particularly relevant for first responder services as first responders frequently turn to their peers and colleagues for support (see Donnelly et al., 2016; Regehr et al., 2002; Regehr & Millar, 2007). In fact, colleagues have been found to be some of the most important sources of support for first responders (Clompus & Albaraan, 2016; Donnelly et al., 2016), and were the most supportive work support in this study. Thus, it seems to be a natural progression that first responder colleagues and peers are trained up as peer support workers, due to the emphasis of support from colleagues. The shared experiences between ambulance personnel and peer support workers is reported to be an important contributor to the success of peer support workers, which likely results in increased rapport and trust (Dobani et al., 2020). This is in contrast to the lack of shared experience with external professionals, which is often reported as a barrier to seeking help (Dobani et al., 2020; Lovesth & Aasland, 2010). Peer support workers work alongside ambulance personnel and external professionals, and are considered the "effective

connectors" which bridge the gap between ambulance personnel's health needs and professional services (Dobani et al., 2020, p. 184). Peer support workers are thus helpful additions when working in collaboration with professionals (Scully, 2011).

Peer support has shown to have inconsistent results, with some research stating it is an effective intervention when implemented well and readily accessed (Scully, 2011; Shakespeare-Finch & Scully, 2004), while other research has demonstrated its ineffectiveness (Dobani et al., 2020; Gallagher & McGilloway, 2008; Halpern et al., 2009). While a peer support program was not enquired about in this research, findings showed peers are perceived as the second most supportive source. It is possible that although peers are considered a supportive source, perhaps they are not readily accessed, due to either group involvement of traumatic events or the machismo culture. Alternatively, there may be limited capacity available from colleagues who are not trained in how to effectively provide support, whereas formally trained peer support workers would be able to provide this much needed support. Therefore, trained peer supporters seem to be an appropriate and necessary source of support to implement in ambulance services, as with appropriate training, peers/colleagues can provide effective support, which is more likely to positively impact ambulance personnel's health. Thus, it is important that future research focused on peer support is prioritised, to investigate usage, satisfaction and any barriers to accessing peer support. This was also recognised by Dobani et al. (2020), who recommended that peer support programs be further researched, suggesting selection and training, supervision and self-care as important areas for peer support research.

Limitations

In addition to the limitations already identified in the manuscripts, there are some more general limitations which impact the research study as a whole. These concern the research sample; issues that were not considered prior; and measurement issues.

Sample. To expand on a limitation previously mentioned, this sample only included current Wellington Free Ambulance personnel, which meant ex-employees were excluded. These ex-employees may have left the service due to the experience of high levels of psychological distress symptoms. This is recognised as the "natural selection process" of ambulance services, where those with high levels of psychological distress symptoms leave the service due to a perceived inability to cope (Gayton & Lovell, 2012; Kirby et al., 2011). This means that those who likely have maladaptive coping strategies and higher levels of psychological distress symptoms are not involved in research, and therefore the research findings are not representative of these individuals, which limits generalizability. Furthermore, voluntary samples are recognised as often oversampling those with strong opinions about the research topic and under sampling those with less interest in it (Allen, 2017). This means that the conclusions drawn in this study need to consider the fact that this is likely a biased voluntary sample, without the perspectives of ex-employees or those who may be experiencing high levels of psychological distress.

Another concern of the sample is the response rate of 38%. Although this is very close to the mean estimate response rate of 43% for psychological online surveys, based on a meta-analysis (Burgard et al., 2019; Dillman, 2000), it still means that only approximately one third of Wellington Free Ambulance personnel have contributed to the findings. As a result, these findings may not be representative of the entire organisation.

Issues not considered. There were a few issues that became apparent during the analysis stage of the research project that would have been beneficial to have considered in

the developmental stage. First, although the main psychological distress variables of focus for this research were depression and PTSS, it would have been useful to also investigate anxiety, sleep issues and any substance use as these significantly impact mental health and wellbeing as well and are under-researched amongst ambulance personnel (Jones, 2017; Wagner et al., 2020). However, in research there are compromises, and appropriate survey length is required to encourage people to complete the survey, with the tradeoff being the focus of PTSS and depression, over the investigation of sleep, anxiety and substance use.

Second, it would have likely been beneficial to investigate the "macho" environment of ambulance services, as this is an often-reported finding. Although there are no clear measurement tools to assess this, it is possible that a few questions focusing on environment and culture may have led to an understanding of any "macho" issues in Wellington Free Ambulance. In addition to measuring the level of machoism, another issue concerns the honesty of the responses provided in the survey. Macho cultures are characterized by a difficulty in admitting weakness and of controlling one's emotions (Reynolds & Wagner, 2007; Skogstad et al., 2013). It is possible that these aspects influenced the level of honesty given in the survey responses. An attempt to counteract this "macho" influence was the use of the anonymous survey; however, it is not known the level of honesty and truthfulness given in the responses.

Third, the investigation of the provision of support, rather than just perceived and received support may have also been beneficial to this study. The support reciprocity principle states that when individuals both receive and provide support to another individual, this can alleviate any negative consequences of receiving support (Gleason & Iida, 2015). As it was considered that support reciprocity may be an important explanation for some of the effects of this study, a targeted focus on the provision of support from

ambulance personnel would have been a valuable addition to this study in order to further understanding of the impact of social support.

Measurement issues. There is evidence that PTSS is chronic, which therefore means individuals can experience a waxing and waning of symptoms over time (Davis et al., 2019; Ozer et al., 2003). As this research was a cross-sectional design, it is unlikely that the full extent of PTSS was captured, due to the chronicity of these symptoms. Thus, rates of PTSS are likely to be higher than results showed. This is further exacerbated by the fact that individuals experiencing PTSS are likely to be avoidant, as avoidance is one of the key symptoms of PTSS, which likely results in their non-participation in this research.

Future directions

To begin with, future directions for research based on the limitations identified are put forward, followed by more specific areas of future research which arose from the research findings. First, future research should include a wider sample of ambulance personnel, with the inclusion of ex-employees. Additionally, undergoing research explicitly with ex-employees will benefit the ambulance service community as a deeper understanding of why individuals left the service and knowledge of any helpful or unhelpful coping strategies can be gained. Second, the focus on a broad array of psychological distress symptoms will also further understanding of ambulance personnel's experience. Third, early considerations given to the "macho" environment and how this may impact responses in research is necessary to get a more accurate picture of ambulance personnel's experience. Fourth, considerations to the provision of support by ambulance personnel could help to get a better understanding of how the support reciprocity principle works, and thus further understanding of the impact of social support. Fifth, issues relating to the measurement of PTSS, and likely other mental health disorders need to be considered, with the possibility of longitudinal research a valuable addition. A longitudinal design will enable several data

collection points in time, to then be able to make causality inferences. The final point is an increase in RCT for interventions and well-designed research with ambulance personnel in general is a necessity, as the majority of first responder research still targets law enforcement (Reynolds & Wagner, 2007).

In terms of specific areas for future research based on the findings from this research, the continued focus on the impact organisational stressors have on mental health is important. This study showed that organisational stressors were more impactful than operational stressors, which is largely in line with the first responder literature (Bennett et al., 2005; Chan, 2007; Purba & Demou, 2019). Continuing to investigate the impact of work-related stressors, as well as interventions and strategies to manage these, will be valuable areas of future research. It will also be important to continue to investigate specific strategies which can be used by ambulance personnel to help cope with organisational stressors in particular.

A more thorough investigation into the nuances between received and perceived support will also be valuable, as perceived support was found to have a stronger effect than received support, and understanding what it is about perceived support that is helpful will be important. Focusing on ways ambulance services can support spouse/family members will also be important, as these sources were perceived as the most supportive, and it is recognised that spouses can feel discomfort discussing specific work-related stressors (Regehr, 2005).

A specific type of intervention that has shown to be of benefit for first responders and ambulance personnel is peer support (Dobani et al., 2020; Shakespeare-Finch & Scully, 2004) and it is considered that peer support would be an effective intervention for Wellington Free Ambulance based on the findings of this research. Colleagues were perceived as the most supportive work support, and research focusing on how to increase

peer's effectiveness of providing support, and matching the level and type of support to the individual will be beneficial. Furthermore, research with a focus on both the provision of peer support (i.e., received support from ambulance personnel's perspective) and how this is perceived will also be helpful to further the research on the distinction between perceived and received support.

This research did not find any effect for social support as a protective factor in the context of traumatic exposure. This was unexpected, and further research in this area will be valuable, as the literature demonstrates the protective nature of social support upon exposure to traumatic events (Brewin et al., 2000). It may be that ambulance personnel utilise a different adaptive coping strategy, rather than social support, and a focus on other strategies used will be helpful to further understanding of how ambulance personnel manage the exposure to traumatic events.

Another unexpected finding concerned the role of gender. There were some unpredicted similarities between male and female ambulance personnel in terms of support, and a more thorough investigation into these similarities will be of benefit. This will increase understanding of the ambulance personnel population and provide information that will help tailor interventions in the future.

Finally, as this study was completely quantitative in design, rich information was likely missed, which could have been captured with a more qualitative design. Thus, including qualitative or mixed-methods approaches in the future will be useful, in order to get a broader understanding and perhaps a different perspective of these important concepts.

Summary

This thesis provides the first exploration of New Zealand ambulance personnel's work-related stressors, risk factors for psychological distress and the impact social support has on psychological distress. Organisational stressors, direct traumatic exposure and male gender were identified as risk factors for psychological distress. Perceived social support negatively predicted both depression and PTSS, whereas received support lacked any effect. In terms of the highest perceived source of support, spouse/family were ranked the highest, followed by colleagues, then supervisors. There were no differences in support for males and females; however, female gender was a moderator of the relationship between operational stress and psychological distress.

In terms of interventions, these can be implemented at either the primary, secondary or tertiary stage, and at an individual or organisational level. The best approach for effective stress management and reduction of psychological distress should be multifaceted and include all levels of interventions (Reynolds & Wagner, 2007). Interventions that target modifiable risk factors of psychological distress are deemed to be the most effective (Wild et al., 2020), and this research identified organisational stressors and direct traumatic exposure to be important modifiable risk factors. The provision of direct support to ambulance personnel's families as well as training in support for supervisors are likely to benefit ambulance personnel. Peer support services are an appropriate secondary stage intervention which can help ambulance personnel feel supported. Ongoing access to professional mental health services is also important.

Limitations, including issues related to the sample, "macho" environment, measurement of PTSS and the focus on PTSS and depression at the cost of other mental health issues were discussed, followed by areas of future research which address these

limitations, and also consider the continued investigation of psychological distress, work-related stressors and social support, based on the findings from this study.

Chapter Eight:

Personal reflection

This thesis was completed as part of my Doctoral degree, and I will briefly reflect on two key learnings I have made that I will take forth into my clinical career as well as life more generally.

For a thesis on social support, it would be amiss of me to not start by acknowledging my own supports, for without them I would not be here, so thank you again to all those who have helped me reach this point. This then dovetails into my first key learning; my increasing ability to turn to these social supports. But first, a recap of definitions…

Perceived support: the cognitive appraisal of being reliably connected to others (Barrera, 1986), and the belief that supportive functions are available if needed (Wills & Shinar, 2000). Perceived support is great! I love knowing that I have important people I can turn to IF I so need it.

Received support: behavioural transactions provided by others (Barrera & Ainlay, 1983). Received support on the other hand… I can see why this construct of social support does not relate to psychological health as closely as perceived support does. The actual receipt of social support can definitely be a hit and miss for myself, and I understand the argument proposed by Wethington and Kessler (1986) of the best psychological outcomes are associated with perceiving that support is available, but not actually receiving this. In fact, receiving help when I have not asked for it, or I have not considered that I need it, does not improve my mental health, and in writing up the results for this thesis, there were many moments where I thought "mmhmm!" in agreement with these arguments.

It seems for me (and in line with what the literature states), knowing that there are important others available to support you if you require it, has a much greater (and positive) impact compared to receiving the actual support. However, both perceived and received

support are similar; they are forms of support, and both are necessary to good health. As a result, I have been making a concerted effort to interpret the receipt of support in a more positive light, rather than perceiving it to mean that I cannot cope alone. Because the reality is, I can't cope alone, and I actually don't want to.

The fact that we have so many studies on social support and its benefits on health also means we have lots of knowledge about how the lack of support impacts us as well. I'm extremely privileged and grateful to have incredible supports around me, and this thesis has just cemented that fact, both in the results, which showed social support to be protective, and in my own life, where my supports have continued to support me over this journey.

In terms of my ongoing practice, I will continue to use my supports – to not fall back into the desire to be independent and all those self- words (: self-sufficient, self-supporting, self-reliant, self-governing etc.,). Instead, I will strive to continue to lean on my support when necessary.

The other key learning for me was in regard to suicides. As part of the survey, one of the questions asked participants to give details about their most distressing event experienced. For 22% of participants, this event was attending a suicide. Although this finding and suicide in general was not covered in depth in this research, it remained an impactful finding for me, and one that continues to influence my thinking.

During data collection, I recall checking up on progress throughout the online period, and without fail, every week at least one person would comment that their most distressing event was a suicide. This is not out of place, as New Zealand has a very high rate of suicides. In fact, the majority of us know someone who has been affected by suicide. I have had two cousins' suicide; one before I started this research, and one in the last few months of completing this research. While both were equally devastating, my perspectives

on suicide have expanded and I have been able to consider the wide-reaching amount of people that one suicide can impact. I also recognise the presence and absence of support in my cousins' lives, as well as other lives lost to suicide. We need an array of supports, and just like this research has shown, specific issues or stressors often require different sources of support. I think this speaks to the need to be well supported by as many sources as possible, including spouse/family members, colleagues, supervisors, friends, teammates, community members, professional services– anyone around us.

This research journey has expanded my thinking on interconnectedness, and secured my aspirations to contribute to the change our country needs in reducing our rates of suicide. I believe social support has an important part to play in this. To also link back to the underlying importance of social support, I recognise that I cannot do any of this without taking care of myself, and for that I need my supports too.

To summarise my two key learnings; social support has an important impact on health and perceiving its presence and even accessing it is important, as well as further understanding the impact a wide range of sources of support can have on any suicides.

Completing this research is a huge achievement for me. Like most students, I've had my struggles, and research on the whole has been difficult. But finally making it to the end is something I am proud of. It has shown me that I can do a huge task which seems like a mountain, both at the start, during and the end! As a result, I have more confidence in myself and also my abilities to be a clinician.

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List of appendices

Appendix A: Online survey

Demographics

What is your role most associated with Wellington Free Ambulance?
Please select the broad job role description that you currently work in.

- ◯ EAS Road staff
- ◯ Patient Transfer Officer
- ◯ Events or Volunteer Staff
- ◯ Communications Staff
- ◯ Headquarters Staff

How long have you been with WFA? Please enter the number of years and/or months.

Years _____

Months _____

What is your age?

_____

What is your gender?

- ○ Male
- ○ Female
- ○ Non-binary/gender diverse

Appendix A

Which ethnic group/s do you belong to?
(please select all that apply)

- [ ] New Zealand European/ Pākehā
- [ ] New Zealand Māori
- [ ] Chinese
- [ ] Indian
- [ ] Samoan
- [ ] Cook Island Māori
- [ ] Tongan
- [ ] Niuean
- [ ] Middle Eastern/Latin American/African
- [ ] Other (please specify)

What is your highest level of qualification?

- ○ NCEA Level 1/School certificate
- ○ NCEA Level 2
- ○ NCEA Level 3/University entrance
- ○ Trade certificate, professional certificate or diploma
- ○ University undergraduate degree or diploma
- ○ University postgraduate degree or diploma

What is your marital status?

- ○ Single
- ○ Married
- ○ Civil Union
- ○ De facto relationship
- ○ Divorced/separated
- ○ Widowed

Please enter the number of people who live in your household (including yourself)

Appendix A

Appendix A

The Police Daily Hassles Scale was the first scale used in the survey, however due to copyright, it is not reproduced here.

Listed below are a number of difficult or stressful things that sometimes happen to people.

For each event **check one or more** of the boxes to the right to indicate that:
(a) it happened to you personally;
(b) you witnessed it happen to someone else;
(c) you learned about it happening to a close family member or close friend;
(d) you were exposed to it as part of your job (for example, paramedic, police, military, or other first responder); or
(e) you're not sure if it fits.

Appendix A

Be sure to consider your entire life (growing up as well as adulthood) as you go through the list of events.

	Happened to me	Witnessed it	Learned about it	Part of my job	Not sure
Natural disaster (for example, flood, hurricane, tornado, earthquake)	☐	☐	☐	☐	☐
Fire or explosion	☐	☐	☐	☐	☐
Transportation accident (for example, car accident, boat accident, train wreck, plane crash)	☐	☐	☐	☐	☐
Serious accident at work, home, or during recreational activity	☐	☐	☐	☐	☐
	Happened to me	Witnessed it	Learned about it	Part of my job	Not sure
Exposure to toxic substance (for example, dangerous chemicals, radiation)	☐	☐	☐	☐	☐
Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)	☐	☐	☐	☐	☐
Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)	☐	☐	☐	☐	☐
Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)	☐	☐	☐	☐	☐

If you have experienced an event, please also indicate the frequency of this by ticking the corresponding boxes. If this event has happened to you once, and you have witnessed it twice, please tick the box with the number 3 in it. There is no need to separate how the event happened for the frequency.

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	1	2	3	4	5	6	7	8	9	10 or more
» Natural disaster (for example, flood, hurricane, tornado, earthquake)	○	○	○	○	○	○	○	○	○	○
» Fire or explosion	○	○	○	○	○	○	○	○	○	○
» Transportation accident (for example, car accident, boat accident, train wreck, plane crash)	○	○	○	○	○	○	○	○	○	○
» Serious accident at work, home, or during recreational activity	○	○	○	○	○	○	○	○	○	○

	1	2	3	4	5	6	7	8	9	10 or more
» Exposure to toxic substance (for example, dangerous chemicals, radiation)	○	○	○	○	○	○	○	○	○	○
» Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)	○	○	○	○	○	○	○	○	○	○

Appendix A

	1	2	3	4	5	6	7	8	9	10 or more
» Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)	○	○	○	○	○	○	○	○	○	○
» Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)	○	○	○	○	○	○	○	○	○	○

Listed below are a number of difficult or stressful things that sometimes happen to people.

For each event **check one or more** of the boxes to the right to indicate that:
(a) it happened to you personally;
(b) you witnessed it happen to someone else;
(c) you learned about it happening to a close family member or close friend;
(d) you were exposed to it as part of your job (for example, paramedic, police, military, or other first responder) or;
(e) you're not sure if it fits.

Be sure to consider your entire life (growing up as well as adulthood) as you go through the list of events.

	Happened to me	Witnessed it	Learned about it	Part of the job	Not sure
Other unwanted or uncomfortable sexual experience	☐	☐	☐	☐	☐
Combat or exposure to a war-zone (in the military or as a civilian)	☐	☐	☐	☐	☐
Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)	☐	☐	☐	☐	☐
Life-threatening illness or injury	☐	☐	☐	☐	☐
Severe human suffering	☐	☐	☐	☐	☐
	Happened to me	Witnessed it	Learned about it	Part of the job	Not sure
Sudden violent death (for example, homicide, suicide)	☐	☐	☐	☐	☐
Sudden accidental death	☐	☐	☐	☐	☐
Serious injury, harm, or death you caused to someone else	☐	☐	☐	☐	☐
Any other stressful event or experience	☐	☐	☐	☐	☐

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If you have experienced an event, please also indicate the frequency of this by ticking the corresponding boxes. If this event has happened to you once, and you have witnessed it twice, please tick the box with the number 3 in it. There is no need to separate how the event happened for the frequency.

Appendix A

	1	2	3	4	5	6	7	8	9	10 or more
» Other unwanted or uncomfortable sexual experience	○	○	○	○	○	○	○	○	○	○
» Combat or exposure to a war-zone (in the military or as a civilian)	○	○	○	○	○	○	○	○	○	○
» Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)	○	○	○	○	○	○	○	○	○	○
» Life-threatening illness or injury	○	○	○	○	○	○	○	○	○	○
» Severe human suffering	○	○	○	○	○	○	○	○	○	○

	1	2	3	4	5	6	7	8	9	10 or more
» Sudden violent death (for example, homicide, suicide)	○	○	○	○	○	○	○	○	○	○
» Sudden accidental death	○	○	○	○	○	○	○	○	○	○
» Serious injury, harm, or death you caused to someone else	○	○	○	○	○	○	○	○	○	○
» Any other stressful event or experience	○	○	○	○	○	○	○	○	○	○

For the following questions, please answer these based on your most distressing/traumatic event that you experienced, as per the previous questions. Please provide details about this event, as well as an approximate date that this experience occurred.

Details about distressing event:

Date of distressing/traumatic experience:

The table below lists problems that people sometimes have in response to extremely stressful experiences. **Keeping your worst event in mind**, please read each problem carefully and then circle one of the numbers to indicate how much you have been bothered by that problem **in the past month**.

In the past month, how much were you bothered by

	Not at all	A little bit	Moderately	Quite a bit	Extremely
Repeated, disturbing, and unwanted memories of the stressful experience?	○	○	○	○	○
Repeated, disturbing dreams of the stressful experience?	○	○	○	○	○
Suddenly feeling or acting as if the stressful experience were actually happening again (as if	○	○	○	○	○

you were actually back there
relieving it)?

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	Not at all	A little bit	Moderately	Quite a bit	Extremely
Feeling very upset when something reminded you of the stressful experience?	○	○	○	○	○
Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	○	○	○	○	○

	Not at all	A little bit	Moderately	Quite a bit	Extremely
Avoiding memories, thoughts, or feelings related to the stressful experience?	○	○	○	○	○
Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	○	○	○	○	○
Trouble remembering important parts of the stressful experience?	○	○	○	○	○
Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no once can be trusted, the world is completely dangerous)?	○	○	○	○	○
Blaming yourself or someone else for the stressful experience or what happened after it?	○	○	○	○	○

The table below lists problems that people sometimes have in response to extremely stressful experiences. **Keeping your worst event in mind**, please read each problem carefully and then circle one of the numbers to indicate how much you have been bothered by that problem **in the past month**.

In the past month, how much were you bothered by

	Irritable behavior, angry outbursts, or acting aggressively?	Taking too many risks or doing things that could cause you harm?
Having strong negative feelings such as fear, horror, anger, guilt, or shame?		
Loss of interest in activities that you used to enjoy?		
Feeling distant or cutoff from other people?		
Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?		

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Not at all	A little bit Moderately Quite a bit Extremely					
		○	○	○	○	○
		○	○	○	○	○
		○	○	○	○	○
		○	○	○	○	○
		○	○	○	○	○
Not at all	A little bit Moderately Quite a bit Extremely	○	○	○	○	○

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	Not at all	A little bit	Moderately	Quite a bit	Extremely
Being 'superalert' or watchful or on guard?	○	○	○	○	○
Feeling jumpy or easily startled?	○	○	○	○	○
Having difficulty concentrating?	○	○	○	○	○
Trouble falling or staying asleep?	○	○	○	○	○

The following questions ask about how you have been feeling during the **past two weeks**. For each question, please select the option that best describes how often you had this feeling.

Over the past 2 weeks, how often have you been bothered by any of the following problems?

	Not at all	Several days	More than half the days	Nearly every day
Little interest or pleasure in doing things	○	○	○	○
Feeling down, depressed or hopeless	○	○	○	○
Trouble falling asleep, staying asleep or sleeping too much	○	○	○	○
Feeling tired or having little energy	○	○	○	○
Poor appetite or overeating	○	○	○	○
	Not at all	Several days	More than half the days	Nearly every day
Feeling bad about yourself – or that you're a failure or have let yourself or your family down	○	○	○	○
Trouble concentrating on things, such as reading the newspaper or watching television	○	○	○	○
Moving or speaking so slowly that other people could have noticed. Or, the opposite – being so fidgety or restless that you have been moving around a lot more than usual	○	○	○	○
Thoughts that you would be better off dead or of hurting yourself in some way	○	○	○	○

If you checked off any problems, how difficult have those problems made it for you to do your work, take care of things at home, or get along with other people?

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- ◯ Not difficult at all
- ◯ Somewhat difficult
- ◯ Very difficult
- ◯ Extremely difficult

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The following questions ask about your social support.

We are interested in how you feel about the following statements. Read each statement carefully.

Indicate how you feel about each statement.

	Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
There is a special person who is around when I am in need	○	○	○	○	○	○	○
There is a special person with whom I can share joys and sorrows	○	○	○	○	○	○	○
My family really tries to help me	○	○	○	○	○	○	○
I get the emotional help and support I need from my family	○	○	○	○	○	○	○
I have a special person who is a real source of comfort to me	○	○	○	○	○	○	○
My friends really try to help me	○	○	○	○	○	○	○

We are interested in how you feel about the following statements. Read each statement carefully.

Indicate how you feel about each statement.

	Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
I can count on my friends when things go wrong	○	○	○	○	○	○	○
I can talk about my problems with my family	○	○	○	○	○	○	○
I have friends with whom I can share my joys and sorrows	○	○	○	○	○	○	○
There is a special person in my life who cares about my feelings	○	○	○	○	○	○	○
My family is willing to help me make decisions	○	○	○	○	○	○	○
I can talk about my problems with my friends	○	○	○	○	○	○	○

Appendix A

Appendix A

We are interested in learning about some of the ways that you feel people have helped you or tried to make life more pleasant for you over the **past four weeks**. Below you will find a list of activities that other people might have done for you, to you, or with you in recent weeks. Please read each item carefully and indicate how often these activities happened to you during the **past four weeks**.

Please read each item carefully and select the rating that you think is the most accurate.

During the past four weeks, how often did other people do these activities for you, to you, or with you:

	Not at all	Once or twice	About once a week	Several times a week	About every day
Gave you some information on how to do something	○	○	○	○	○
Helped you understand why you didn't do something well	○	○	○	○	○
Suggested some action you should take	○	○	○	○	○
Gave you feedback on how you were doing without saying it was good or bad	○	○	○	○	○
Made it clear what was expected of you	○	○	○	○	○

	Not at all	Once or twice	About once a week	Several times a week	About every day
Told you what he/she did in a situation that was similar to yours	○	○	○	○	○
Told you that he/she feels close to you	○	○	○	○	○
Let you know that he/she will always be around if you need help	○	○	○	○	○
Told you that you are OK just the way you are	○	○	○	○	○
Expressed interest and concern in your well-being	○	○	○	○	○

Please read each item carefully and select the rating that you think is the most accurate.

During the past four weeks, how often did other people do these activities for you, to you, or with you:

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	Not at all	Once or twice	About once a week	Several times a week	About every day
Comforted you by showing you some physical affection	○	○	○	○	○
Told you that he/she would keep the things you talk about private	○	○	○	○	○
Agreed that what you wanted to do was the right thing	○	○	○	○	○

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	Not at all	Once or twice	About once a week	Several times a week	About every day
Did some activity together to help you get your mind off things	○	○	○	○	○
Gave or loaned you over $25	○	○	○	○	○

	Not at all	Once or twice	About once a week	Several times a week	About every day
Provided you with a place to stay	○	○	○	○	○
Loaned you or gave you something (a physical object) that you needed	○	○	○	○	○
Pitched in to help you do something that needed to get done	○	○	○	○	○
Went with you to someone who could take action	○	○	○	○	○

These are questions about the sorts of support that you may receive from different people. For each answer below, please select the option that is best for you.

How much does each of these people go out of their way to do things to make your work life easier for you?

	Very little	A little	Some	A lot	A great deal
Your immediate supervisor	○	○	○	○	○
Other people at work	○	○	○	○	○
Your spouse or partner, friends and relatives	○	○	○	○	○

How easy is it to talk with each of the following people?

	Very little	A little	Some	A lot	A great deal
Your immediate supervisor	○	○	○	○	○
Other people at work	○	○	○	○	○
Your spouse or partner, friends and relatives	○	○	○	○	○

How much can each of these people be relied on when things get tough at work?

	Very little	A little	Some	A lot	A great deal
Your immediate supervisor	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○

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Other people at work

Your spouse or partner, friends and relatives

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How much is each of the following people willing to listen to your personal problems?

	Very little	A little	Some	A lot	A great deal
Your immediate supervisor	○	○	○	○	○
Other people at work	○	○	○	○	○
Your spouse or partner, friends and relatives	○	○	○	○	○

Again, thank you very much for your time and effort.

If any of these questions have caused any distress for you, please reach out to your peer supporter, work colleagues, friends and family/whānau.

Alternatively, the national helplines can also be accessed

Wellington Free Ambulance support:
Peer supporters – refer to station posters or contact your SM for details
Justin (Chaplain) – 022 431 2537
Stratos Employee Assistance Programme – 0800 772 867

National helplines:
Need to talk? Free call or text **1737** any time for support from a trained counsellor
Lifeline – 0800 543 354
Suicide Crisis Helpline – 0508 828 865 (0508 TAUTOKO)
Healthline – 0800 611 116
Samaritans – 0800 726 666
Wellington warmline – 0800 200 207 (7pm-1am, Tuesday – Sunday)

Thank you very much for completing this survey and being part of this important research mental health and resilience survey.

In the separate page which follows you can enter your email address and check the box if you would like to receive a summary of the research findings.

Please also enter your email address and check the box if you would like to go into the draw to win one of twelve $40 vouchers.

Your email address will not be linked to your individual data.

Appendix B: Participant information sheet

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

School of PSYCHOLOGY

Login process

Mental health and resilience in Wellington Free Ambulance

The survey which follows will investigate cumulative trauma and the impact it has on Wellington Free Ambulance workers.

In order to limit responses to these workers only, we have set up a simple authentication process in the following page, where you will be asked you to login. Please enter your CAD number or your employee/payroll number. These details are only used to enter the survey pages and your answers will remain anonymous and are not connected to this number in any way.

Information Page

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Mental health and resilience in Wellington Free Ambulance Information Sheet

Who is doing this research?
My name is Tayla Reti and I am a clinical psychology student at Massey University. I have been studying psychology for the last seven years and am currently enrolled in the Clinical Psychology Doctoral training program at Massey University. My current research is looking into social support and cumulative trauma in Wellington Free Ambulance personnel.

What is this research about?
This research will investigate cumulative trauma and social support, and the impact it has on Wellington Free Ambulance workers.

Participant Identification and Recruitment

All Wellington Free Ambulance workers are invited to participate. The link to this survey will be in the Keeping Connected newsletter. The only inclusion criteria for being part of this research is that you are a current Wellington Free Ambulance worker. All responses will be anonymous.

Importantly, as this research is investigating cumulative trauma, some of the questions may cause distress. If this does happen, please reach out and call the numbers listed on the next page, or talk to your peer supporter, family/whānau or friends.

Project Procedures

This research consists of an online survey, which is expected to take approximately 30 minutes. You
will be asked to read questions and indicate your answers by ticking the appropriate boxes.

Although we expect there to be no difficulties in completing the questionnaire, as mentioned earlier, there is the possibility that recalling traumatic events may cause some distress. If this happens to you, please contact your peer supporter, family/whanau, friends or colleagues. Alternatively, there are numbers you can call if you want to talk to someone else, and these are listed at the end of this sheet. You could also ring your general practitioner.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- ask any questions about the study at any time during participation;
- be given access to a summary of the project findings when it is concluded.
- Completion and return of the questionnaire implies consent. You have the right to decline to answer any particular question.

How can you find out about the results?

At the end of the questionnaire, there is a link to a separate page on which you will be asked to enter your email address if you would like to receive a summary of the results of the questionnaire. This email address will not be linked to your questionnaire information. A summary of the project will be sent to you at the completion of the research, or you can contact me at any point requesting a copy of the results. Communication of research findings will preserve anonymity at all times.

Appreciation of your time

To show appreciation for the time people take to participate in the research we will also include all those who provide their email address on the separate page at the end of the questionnaire in a draw to win one of twelve $40 gift vouchers. Because of the complete anonymity of the questionnaire itself, entering your email address is the only way we can enter you into our 'thank you' draw.

Thank you very much for your interest in this study.

Researcher
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Wellington, New Zealand
T +64 4 801-5799 ext 85071 : W psychology.massey.ac.nz

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application 17/57.
If you have any concerns about the conduct of this research, please contact Dr Lesley Batten, Chair, Massey University Human Ethics Committee: Southern A,
telephone 06 356 9099 x 85094, email humanethicsoutha@massey.ac.nz

Appendix C: Support sheet and consent

Who to contact if you are feeling distressed?

If any of these questions have caused any distress for you, please reach out to your peer supporter, work colleagues, friends, and family/whanau. Alternatively, the national helplines below can also be accessed.

National helplines
Need to talk? Free call or text 1737 any time for support from
a trained counsellor Lifeline – 0800 543 354
Healthline – 0800 611 116
Samaritans – 0800 726 666
Suicide Crisis Helpline – 0508 828 865 (0508 TAUTOKO)

Peer Support
Alternatively, you could access your peer support team within WFA. Peer supporters are personnel who have been trained and receive ongoing training in the methods of providing support to others who require assistance. They provide confidential support and assistance to colleagues/families affected by critical incident, cumulative or personal stress. Please refer to station posters or contact your SM to access peer supporters' details.

Chaplaincy
On-site support and phone call support are provided by WFA Chaplain. WFA staff/volunteers and their immediate families can self-refer to Justin for assistance with any work or non-work related issues. Please contact Justin on 022 431 2537.

Employee Assistance Program (EAP)
Wellington Free Ambulance's EAP is provided by Benestar (formerly known as Stratos). The Stratos Employee Assistance Programme provides counsellors who help employees/volunteers deal with a broad range of issues including personal relationships, grief (any loss or change), physical, emotional and psychological ill-health, the impact of legal problems, abuse and addiction, and any other personal difficulties which could or may impact on their ability to perform in the workplace. They can be accessed 24/7 online or on 0800 772 867.

Respondent Consent

Thank you for participating in this questionnaire.
Your participation implies consent.
You have the right to decline to answer any particular question.
I have read and understood the information sheet for this study and consent to collection of my responses
(Please click on the 'Yes' choice if you wish to proceed.)

Yes ○

No ○

Appendix D: Poster

Appendix E: Screenshot of piece in newsletter

Latest news

- **One component of our modernisation programme is to adopt a global business excellence model.** We have chosen the Baldridge Excellence Framework, which has been used by thousands of organisations worldwide. It will help us answer questions about how well Wellington Free Ambulance is doing, how we measure this, and what we can improve. We want everyone to be part of this. The first step will be inviting staff to attend one of four workshops, which will focus on measuring Wellington Free against the seven Baldridge criteria. Read more about our journey to excellence here.

CORPORATE SERVICES UPDATE

- **Thank you to the 61 staff members from across the organisation who have completed the Mental Health and Resilience Survey so far.** The survey is part of a PhD training programme undertaken by psychology student Tayla Reti from Massey University. Tayla is investigating mental health and resilience in Wellington Free Ambulance staff and volunteers through an online survey. The findings from this survey will be used to help inform our own mental health and wellness programme. The survey is about the trauma you may have experienced on the job, and the impact social support has on exposure to trauma and overall wellbeing. Please utilise these and your own support networks if you need to. Click here to read more.

MENTAL HEALTH AND RESILIENCE SURVEY

The survey will take approximately 20-30 minutes, and your responses remain anonymous. Everyone who completes the survey will go into a draw to win one of twelve $40 vouchers – thank you to Rob Gladding, who has given permission to print his name, for completing the survey and being the first to win one of these vouchers. Access the survey here.

- **Events ePRF Training - Over the next few weeks, the events team are undertaking ePRF training on Kete.** There will be training tablets available to everyone in order to make sure the training gets completed. Events are planning to go live with ePRF in early July (this means event vehicles will have tablets in them and not the old paper copies). Upcoming sessions (This should take approximately 30 minutes in total):

Thursday 7 June – Davis Street offices, 10.00am-6.30pm (With Chris Buckley)

Appendix F: Research Case Study: The significance of social support for older adults

Abstract

This case study outlines the contributions that my research project has made to my clinical practise. The research project investigates how work-related stressors and traumatic events results in psychological distress for ambulance personnel, and how social support can moderate this relationship. Social support was associated with psychological distress, with a negative relationship between perceived support and depression, and a positive relationship between received support and depression and received support and posttraumatic stress symptoms (PTSS). My internship with Older Person's Mental Health Service also illustrated the importance of social support, and the similarities in findings for this research and my internship are discussed. The intentional use of the scientist-practitioner model which underpins clinical psychology is also discussed as a technique to increase credibility.

Doctoral research overview

This research project investigates psychological distress, work-related stressors and traumatic events exposure and the impact of social support for Wellington Free Ambulance personnel. The main purpose of this research is to develop an understanding of potential risk factors for psychological distress for ambulance personnel, and whether social support can protect against psychological distress in the context of these identified risk factors, and in the face of traumatic exposure and work-related stress. This resulted in the following specific research questions:

1. What are the risk factors for psychological distress for ambulance personnel?
2. Do perceived support and received support have the same impact on psychological distress for ambulance personnel?
3. Does social support moderate the relationship between work-related stress and psychological distress?
4. Do ambulance personnel use different sources of social support?
5. Is there a difference between male and female ambulance personnel in terms of risk factors, psychological distress, and social support?

Significance of current research

There is limited research concerning ambulance personal in the first responder literature (Lawn et al., 2020), and even less research on ambulance personnel in New Zealand. There has been substantial research completed with police officers in New Zealand (see Huddleston et al., 2007; de Terte et al., 2014), however there are only a few studies with a focus on the mental health of New Zealand ambulance personnel (see Brough, 2004a; 2004b). Thus, this research has addressed the gap in the literature.

The Wellington Free Ambulance is an emergency medical service for the greater Wellington region. Ambulance personnel at Wellington Free Ambulance consist of

paramedics, headquarters staff and communications staff. Ambulance personnel experience work-related stressors, including organisational and operational stressors and the direct exposure to traumatic events. Research shows that ambulance personnel experience psychological distress at rates higher than the general population (Belteham et al., 2013), which is likely due to their work environments (Donnelly et al., 2016). It is thus important to investigate the impact of work-related stressors on psychological distress, and if social support can influence these psychological distress outcomes.

It is also important to care for the individuals that care for others. Dattilio (2015) recognised that health professionals are known to neglect their own wellbeing. The health of emergency personnel is of upmost importance, as in order to give high-quality care, emergency personnel must also be healthy. Therefore, understanding how frequent exposure to work-related stressors can result in psychological distress, and if social support can impact these effects, is beneficial for this population.

Method

Participants. A sample of 125 Wellington Free Ambulance staff participated, consisting of Paramedics (61%), Communications staff (17%), Headquarters staff (15%), Patient Transfer Officers (4%) and Events staff (3%). The age range was from 23 to 64 (M = 37.99, SD = 10.66). Years of experience at Wellington Free Ambulance ranged from under one year to 37 years (M = 8.49, SD = 6.64). Sixty two percent of staff were female and 38% were male. The majority of participants were New Zealand European/Pākehā (87%), and in a relationship, either married or civil union (49.2%) or in a de facto relationship (30.6%). Seventeen percent of participants were single and 3.2% divorced or separated. Participants were largely qualified, with 22% holding a trade or professional certificate or diploma, 46% with a university degree or diploma and 23% with a postgraduate degree or diploma. Nine percent had NCEA Level 1, 2 or 3. Most participants

lived with at least one other person, with 33.6% residing with one other member, 21% with two other members, and 37.4% with three or more other members. The remaining 8.4% of participants lived alone. All participants reported exposure to at least one traumatic event. There are approximately 330 staff members employed by Wellington Free Ambulance, resulting in a response rate of 38%.

Measures

Traumatic exposure. Traumatic exposure was measured by the Life Events Checklist 5 (LEC-5; Weathers et al., 2013). The LEC-5 is a 17-item measure of exposure to potentially traumatic events. Respondents are required to indicate if they have experienced an event either: directly; witnessed it; learned about it happening to close friend or family member; or experienced it as part of their job. The LEC-5 items were separated into the following categories for scoring:

Global trauma included all items endorsed across all types of exposure to traumatic events (directly, witnessed, learned about and as part of their job)

Direct trauma included all items endorsed in the directly experienced type

Job trauma included all items endorsed in the experienced as part of my job type

Interpersonal trauma included all items which were perpetrated by other humans in the direct trauma type

Non-interpersonal trauma included all items which were not directly perpetrated by one human towards another human in the direct trauma type

Participants were also asked to name their most distressing event and invited to provide as much or as little detail as they wanted.

Operational stress. Operational stress was measured by the subscale ‘Workload’, from the Police Daily Hassles Scale (PDHS: Hart et al., 1993), which is used to assess the negative work experiences police officers experienced on a daily basis. This measure is

deemed appropriate for use with other emergency service personnel (A. Hart, personal communication, January 11, 2018). The Workload subscale consisted of four items.

Organisational stress. Organisational stress was measured by the subscale 'Communication', from the PDHS. Internal consistency coefficient for Communication was reported as .88 The Communication subscale consisted of four items.

Psychological distress. Psychological distress was measured as PTSS and Depression.

PTSS. PTSS was measured by the Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013), which is a 20-item self-report measure. The PCL-5 assesses the 20 symptoms of PTSD according to the fifth edition of the diagnostic and statistical manual of mental health disorders (DSM-5: American Psychiatric Association; APA, 2013) in relation to the experience of one specific traumatic event. The PCL-5 can be used to indicate the presence of symptoms consistent with PTSD (Weathers et al., 2013). With recommended cut off scores of 31-33, the higher value is considered optimal when trying to make provisional diagnoses, and also to minimise any false positives (Weathers et al., 2013). Thus, the higher cut off score of 33 was used in this research.

Depression. Depression was measured by the Patient Health Questionnaire 9 (PHQ-9; Kroenke et al., 2001), a self-report measure of depression, which assesses the nine symptoms of depression according to the DSM-5. A cut off score of 10 is recommended (Kroenke & Spitzer, 2002), and was thus used in this research.

Social support. Social support was measured as received support and perceived support.

Received Support was measured by the Inventory of Socially Supportive Behaviours, Short Form (ISSB; Barrera et al., 1981). The ISSB is a 19-item scale derived from the larger

40-item ISSB. It measures how often respondents receive various examples of social support during the preceding month.

Perceived Support was measured by the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). The MSPSS is a brief self-report measure which subjectively assesses social support from three sources: family, friends and significant other. The MSPSS produces a total score, which is described as a useful measure of overall functioning and well-being (Osman et al., 2014).

Sources of perceived support were measured by the Social Support Scale (Caplan et al., 1975). This scale has four items which assess support from supervisor, colleagues and spouse/family. These four items assess the perceived emotional and instrumental support respondents believe they receive from supervisors. Strong psychometric properties have been reported for the scale (Beehr et al., 1990; Kaufmann & Beehr, 1989).

Procedure

The research proposal was presented to Wellington Free Ambulance's Wellaware Advisory Committee. A draft survey version was pilot tested with key groups, and adjusted according to feedback received. The final version of the survey was then accepted and went online on 23 May 2018 for three months. The survey consisted of 101 items, and took approximately 20-30 minutes to complete. Participants were provided with a Participant Information Sheet prior to completing the survey and were given the option of receiving a summary of results upon completion. Participants could also opt in to be entered into a prize draw to win one of 12 $40 grocery vouchers as a token of researchers' appreciation for completing the survey. The survey was online for 13 weeks from May to August 2018.

Ethical considerations

Ethical approval for the current research was granted by the Massey University Ethics Committee in January 2018 (Application 17/57). The main ethical considerations for this research were confidentiality and provision of supportive contacts if participants became distressed.

In order to access the survey, potential participants had to enter their employee number to gain access to the survey. This access page was a separate page to the survey itself. It was used to ensure that only Wellington Free Ambulance staff could complete the survey. A list of all current employee numbers were input into the system. No other identifiable information was included. Upon completion of the survey participants were also asked if they wanted to go in the draw to win a voucher and to receive a summary of the data. If they agreed, they were taken to another separate page, which was not linked to their survey responses. All of the data was stored on the Qualtrics website in the survey and on a personal password protected computer. To further ensure confidentiality, certain demographic questions such as participants' job role and ethnicity were excluded in analysis as this could have made participants identifiable due to a small response rate for groups within these demographics.

Asking participants to describe their most traumatic event and to think about the multiple stressful events they have experienced and their reactions to these is likely to be distressing for some. All participants were provided with contacts and numbers to seek support from if they felt distressed. This was shown in the Participant Information Sheet at the beginning of the survey, as well as shown again at the end of the survey.

Finally, to ensure that the survey was culturally appropriate, cultural expertise was sought from Māori researcher and clinical psychologist Dr. Simon Bennett, School of

Psychology, Massey University. Dr. Bennett also agreed to be available to discuss any cultural issues that may arise throughout the research process.

Data analysis

SPSS version 25 was used to conduct statistical analyses. Hierarchical regression analyses with interaction terms were computed to test the hypotheses by controlling for demographic variables and testing for the added value of the independent variables (Field, 2018). A separate hierarchical regression analysis for each psychological distress variable (PTSS and depression) was completed. Relevant demographic control variables were included in step 1. Independent variables including social support, organisational stress and direct trauma were added in step 2. At step 3, relevant interaction terms (the product of multiplying relevant IVs) to hypotheses were included. Significant interactions were entered into ModGraph (Jose, 2013), a software program that graphs the interaction results and calculates the simple slopes. Assumptions of linearity, normal distribution, no outliers, multicollinearity, homoscedasticity and adequate sample size were all satisfied for correlation and regression analyses.

Clinical psychology internship

My internship for 2019 was 12-months at the Older Person's Mental Health Service (OPMH) at Hutt Valley DHB, supervised by Karen Kyne. The following section provides a discussion and self-reflections about the way in which my research has contributed to my clinical practise.

Social support

Social support was first defined by Cohen and Syme (1985, p. 4) as "resources provided by other persons". It was later separated into three categories: perceived support, received support and social embeddedness. Perceived support can be defined as the cognitive appraisal of being reliably connected to others (Barrera, 1986), and received

support the behavioural transactions provided by others (Barrera & Ainlay, 1983). Social embeddedness is about the connection individuals have to significant others in their social environments (Barrera, 1986). This research was concerned with perceived support and received support, as well as who provides (or is perceived as providing), this support.

In this research there were three sources of perceived support that were investigated with ambulance personnel; spouse/family, colleagues and supervisors. Spouse/family was rated as the most supportive source of perceived support. Received social support concerns "support mobilization" or "aid provision" (Barrera, 1986), and focuses on the actual support received. Sources of social support is about who individuals perceive as supportive and who they do in fact get support from. In this study, the sources of support studied were immediate supervisor, other people at work and spouse or friends and family. Findings showed that spouse/partner, friends and family were considered the most supportive source, followed by colleagues and then supervisors.

Generally, social support is considered a protective factor for mental health (Lincoln, 2000). Research findings have repeatedly shown that people with spouses, family members, and friends who provide support have better health than those with fewer resources (Lincoln, 2000). Social support is linked to lower self-reported distress, lower heart rate and blood pressure, better immune functioning, use of more adaptive coping strategies, and better treatment outcomes (Dougall et al., 2001; Osman et al., 2014).

The impact that social support has on older adults is even more pronounced than the general population, with findings showing that high levels of social engagement are significantly associated with a broad spectrum of health and wellbeing, including the reduction in symptoms of depression and anxiety, physical impairments, cognitive impairments and an overall higher quality of life (Golden et al., 2009). Likewise, poor social connections and fewer social activities in the elderly have been shown to predict

greater cognitive decline (Stephens et al., 2011), with social isolation shown to be a major independent risk factor for mortality (Reblin & Uchino, 2008).

Participants in this research rated their spouse/partner, friends and family as the most supportive source. This is similar for older adults, who generally have retired and do not have their work connections and support anymore. Friends were found to be particularly important in Boen et al. (2012) study of older adults living at home, where it was suggested that friends represented a source of identity and shared similar characteristics, and represented a strong source of support. Boen et al. found a significant and consistent association between the absence of social support and psychological distress. Having a spouse/partner and a large social network, increased contact with family, and emotional and instrumental support are all associated with reduced depression in older adults living at home (Mohd et al., 2019). These findings suggest that social support from family and friends is a valuable and practical solution to reducing both physical and mental illness in older adults.

Reflections

One of the clear connections between this research and my work with older adults, is the absolute importance of social support. Ambulance personnel experience traumatic events which frequently results in distress, and likewise, older adults experience traumatic events or distress, (which is often through loss of a job, role, or loved one), and this too oftentimes results in distress. Although these events impact everyone differently, a valuable intervention in protecting against psychological distress in the context of traumatic events, is social support (Brewin et al., 2000). Additionally, the literature also demonstrates the associations between social isolation and loneliness and poorer mental and physical health in the absence of traumatic events (Leigh-Hunt et al., 2017). It seems that everyone can benefit from social support, regardless of whether that is through how much support

individuals perceive they have or whether they are in fact getting the support, social support has a positive impact on individuals and their health (Cohen & Wills, 1985).

An interesting (although not completely surprising) finding was the effect received support had on PTSS and depression, where received support was not a predictor on psychological distress, even though perceived support was. I can also attest to the impact received support has on my wellbeing at times, as mentioned in Chapter 8. It seems that older people I worked with, also demonstrated this relationship with received support and mental health. The literature states that perceived support buffers the effect of stress in older adults, and it is suggested that perceived support reassures older adults that help is available if necessary, which enhances the person's ability to cope and deal with stressful events (Mohd et al., 2019). This is very different to the impact received support had on older adults' mental health, and it was suggested that received support creates dependency and a sense of helplessness in older adults, as it can undermine a person's self-esteem (Mohd et al., 2019). This is similar to the findings of this study, my own experience of social support, and was also demonstrated in my internship.

The positive relationship between received support and psychological distress was confusing for me at first, because I had the perception that older people wanted support; that they wanted to have people around them. However, a few months into my internship, I was able to see that clear difference between perceived support and received support. The older people I worked with wanted to know that they were connected to others, and that if they needed something, there would be someone able to provide it (ie; the definition of perceived support). However, when these individuals received support without having asked for it, particularly from family members, this did not always result in favourable outcomes. Mohd et al.'s (2019) finding that received support can undermine older adults' self-esteem and create a sense of helplessness became very evident. Older adults I worked with also

essentially shooed practical supports away, yet would embrace the chance to connect with someone and talk about their lives. The clear difference in impacts of perceived and received support were illustrated by the older people I worked with, paralleling the results captured in the survey of ambulance personnel.

Clinical psychology is underpinned by the scientist-practitioner model. While I knew of this, I hadn't really put this into practise so intentionally until my internship year. One of the factors I was most worried about with working with older people was the difference in age. I was concerned that the age gap, generational difference and my considerable lack of life experience compared to potential clients, was going to be an issue. I questioned why older adults would want to listen to a young, inexperienced woman coming in and potentially giving advice on how to improve their mental health. This is where I was able to pull on the scientist-practitioner model, and arm myself with evidence from the literature. The way I was able to establish my authority and expertise was through using the literature and research, to increase my understanding of particular diagnoses and social environments. I found that when I had read widely, I could more effectively answer any questions posed, explain points better, and I was more confident in my responses. This had a positive effect as the increase in knowledge and increase in confidence enabled me to establish enough credibility to work on the therapeutic relationship to then be given the opportunity to work with the older adults.

Summary

My research, internship year, and own personal experiences have demonstrated both the importance of social support, as well as the clear differences between perceived and received support. The importance of perceived support is a key take-home message for me from this Doctoral journey. Additionally, the use of the scientist-practitioner model in an intentional and effective way has also been a key learning, and one I have continued to

implement, as I often find myself in situations where I need to establish authority and credibility. Using available research to find the most evidence-based interventions for a particular population or disorder and to maintain my knowledge on subjects is a key part of my practise. Continuous reading gives me the knowledge and the confidence in what I am doing, which increases my effectiveness in working with clients.