University of Southampton

Faculty of Environmental and Life Sciences

School of Psychology

An Investigation into Compassion, Moral Injury, Burnout and Psychological Distress in First Responders

By

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Thesis for the degree of Doctorate in Clinical Psychology

May 2024

University of Southampton

Abstract

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The first chapter details a systematic review of studies that investigate the relationship between self-compassion (SC) and depression, anxiety and post-traumatic stress disorder (PTSD) in first responders (FR). Searches were conducted using five databases: PsychINFO, MEDLINE, Web of Science, Scopus and Google Scholar. Seven studies met the inclusion criteria and were included in this review; four correlation-based studies and three intervention-based studies. A narrative synthesis indicated a potential relationship with higher SC being associated with lower symptoms of depression, anxiety and PTSD. Secondly, interventions incorporating SC can have positive effects in increasing SC and reducing symptoms of depression, anxiety and PTSD in FR. Future research should employ higher methodological quality and robust randomised control trials in order to provide a better understanding of the relationship between SC and depression, anxiety and PTSD in FR, alongside understanding what interventions can and/or will be effective.

The second chapter is an empirical paper exploring the relationship between psychological difficulties (PD), PTSD, alcohol use, the inhibitors of compassion and the facilitators of compassion on moral injury (MI) and burnout in police officers and firefighters in the United Kingdom (UK). A total of 125 participants completed online measures of MI, burnout, PD, PTSD, alcohol use, shame, fears of compassion, self-criticisms and self-reassurance and the three flows of compassion. Bivariate correlations and a hierarchal

multiple regression revealed the relationships between the aforesaid variables, alongside whether these predicted MI amongst police officers and firefighters. Years in service, PD, burnout, shame, self-criticisms, fears of compassion and the three flows of compassion were all significantly associated with MI. PTSD, self-criticisms, SC and compassion from others (CfO) were all significantly associated with burnout. Compassion to others (CtO) and CfO significantly predicted MI after accounting for the aforementioned variables, with PD being revealed as the biggest predictor of MI, followed by years in service. The findings indicate strong relationships between MI, PD and the facets of compassion in UK police officers and firefighters. Results highlight the clinical importance of screening for MI, PD and the facets of compassion, alongside the consideration of using compassion-based treatments.

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Research Declaration of Authorship

Print name: David Singleton

Title of thesis: An Investigation into Compassion, Moral Injury, Burnout and Psychological Distress in First Responders.

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signature: …….. Date: 17/05/2024

Acknowledgements

Writing this thesis has by far been one of the most challenging yet rewarding things I have done, and which I am immensely proud of. It has to be said, that I would not have been able to get through this without the support of the following people.

Firstly, I would like to thank every single person who took part in the study; I appreciate your time and effort that went into engaging with the research, and it could not have been done without your participation. To my supervisors, Dr David Beattie and Professor Margo Ononaiye, I am immensely appreciative of all your advice, guidance, support and encouragement throughout this whole journey. It has been a highly stressful yet weirdly wonderful experience, and I will always be grateful for your positivity and belief in me. It has been a pleasure to work alongside you both, an experience where I am thankful to have been the recipient of your knowledge, wisdom, reassurance and support. Thank you also to Dr Jin Zhang for your incredible support with Qualtrics, you really were a lifesaver for me during this time.

How can I not thank my cohort? We have been on this rollercoaster journey for almost three years now. The emotional support that we have shared has truly been an amazing experience, and I feel sad when I think about no longer being with you all regularly once we have qualified. I will cherish the memories we have and look forward to times when we can reunite and reminisce about our DClin times. A special thank you though has to be said to my fellow peer Kathryn McAree. You have been a constant pillar of support throughout this thesis. I value and appreciate all the times you have spent listening to my rants and moans, validating how I felt, encouraging me to keep going, helping me problem solve, and constantly reassuring me.

I have to thank my family and friends for all your constant support and putting up with me, especially at times when I have been grumpy and extremely stressed. Thank you for being so understanding, being so kind and reassuring, and cheering me on all the way. I honestly feel so incredibly lucky to have such wonderful family and friends. To my mum and dad, thank you for always believing in me, and for always showing your love, care, support,

and passion throughout the journey that has led me to where I am today. I could not have done any of this without you, and I love you both very much.

To my boyfriend Andy, I had a mixture of emotions when I found out that I had been successful in gaining a place of the doctorate, as whilst I was excited for taking steps towards my dream, it meant that I would have to move away from you for 3 years. Thank you for the incredible amount of support you have given me, and for putting up with my stress, grumpiness, and moaning. You have always shown me love, care and encouragement, and I truly am so grateful and feel so lucky to have you in my life. Here is to the next chapter in our lives … moving in together! Thank you also to Andy's family for supporting me throughout this journey and for always making me smile.

To my friends, thank you all for being such wonderful people. You have all kept me grounded throughout this whole journey, and your support has been so very much appreciated. Thank you to Dr Sam Walkden for your advice and support when I came to you in moments of complete bewilderment. Thank you to Dr Leanne Morgan for your humour, your knowledge and support, I truly am very grateful. To Dr Ruimin Ma, my best friend, we have known each other for 10 years now, and we have supported each other through our doctorates. You always help me remember why I chose to go into this field, and thank you for always being there for me. Thank you also to my friends Emily, George, Jethro, Rob, Rosie, Sarah, Ugne, Yasmine and Zuzanna for being there for me over this journey.

To my late grandmother Vera, what can I say grandma … I have only gone and done it! You have inspired me throughout my life. You watched, supported, and cheered me on throughout this whole journey, wanting to see me reach my dream. I feel like the luckiest person in the world to have had you as my grandma. When you passed away earlier this year, it was the most heartbreaking time of my life, but I know that you have seen me through to the end. This doctorate is completely dedicated to you. Thank you for everything you have done for me, I love and miss you every day.

There are so many more people I would like to thank, but that could end up being a whole other chapter in this thesis. Without you all, this would not have been possible, and I am eternally grateful for all your support and to have you all in my life. Thank you.

Definitions and Abbreviations

ACT	Acceptance and Commitment Therapy
AUDIT	Alcohol Use Disorders Identification Test
BABCP	British Association for Behavioural and Cognitive Psychotherapies
CB	Cognitive Behavioural
CBT	Cognitive Behavioural Therapy
CEAS	The Compassion Engagement and Action Scales
CfO	Compassion From Others
CFT	Compassion Focused Therapies
CORE-10	The Clinical Outcomes in Routine Evaluation
CtO	Compassion To/Towards Others
DASS-21	The Depression Anxiety Stress Scale – 21
DSM-5	The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
E.g.	For Example
EISS	The External and Internal Shame Scale
EMDR	Eye Movement Desensitisation Reprocessing
FCFO	Fears of Compassion From Others
FCS	The Fears of Compassion Scale
FCTO	Fears of Compassion Towards Others
FCTS	Fears of Compassion To Self
FoC	Fears of Compassion
FR	First Responders
FSCRS	The Forms of Self-Criticising/Attacking and Self-Reassuring Scale
GBD	Global Burden of Diseases
HADS	Hospital Anxiety and Depression Scale
I.e.	Id est (Latin for “that is”)
IES-R	The Impact of Event Scale – Revised
IPT	Interpersonal Psychotherapy
M	Means

MBCT	Mindfulness Based Cognitive Therapy
MBHP	Mindfulness Based Health Promotion
MBI	Mindfulness Based Intervention
MBI-HSS	Maslach Burnout Inventory – Human Services Survey
MBSR	Mindfulness Based Stress Reduction
MI	Moral Injury
MIES	The Moral Injury Events Scale
N	Number
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
OLBI	Oldenburg Burnout Inventory
PCL-5	The Post-Traumatic Stress Disorder Checklist
PD	Psychological Difficulties
PHQ-9	Patient Health Questionnaire
PHQ-9 D	Patient Health Questionnaire – German Version
PMIE	Potentially Morally Injurious Experiences
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PROSPERO	Prospective Register of Systematic Reviews
PTE	Potentially Traumatic Event
PTSD	Post-Traumatic Stress Disorder
RCT	Randomised Control Trials
SC	Self-Compassion
SCS	The Self-Compassion Scale
SCS-D	The Self-Compassion Scale – German Version
SCS-SF	The Self-Compassion Scale- Short Form
SD	Standard Deviation
Sig	Significant
SQAC	The Standard Quality Criteria for Evaluating Primary Research from a Variety of Fields
SR	Self-Reassurance

TF-CBT	Trauma Focused Cognitive Behavioural Therapy
TF-CBT+CFT	Trauma Focused Cognitive Behavioural Therapy and Compassion Focused Therapy
WHO	World Health Organisation
WHOQOL (Bref)	The World Health Organisation Quality of Life Brief Version
WL	Wait List
UK	United Kingdom
USA	United States of America

Chapter 1: What is the Relationship Between Self-Compassion and Depression, Anxiety and PTSD in First Responders?: A Systematic Review

Journal Specification: The 'PLOS ONE' journal was selected to guide the preparation of this paper. The author guideline (Appendix A) state that there are no restrictions on the word count, font, amount of tables, or figures. Guidelines request double line spacing, Vancouver referencing, and table formatting is different to APA7.

Word count: 7,243 (excluding tables, figures, references, appendices and acknowledgements).

Abstract

First responders (FR) are a recognised population at an increased risk of developing psychological difficulties (PD), including depression, anxiety and post-traumatic stress disorder (PTSD). Recent evidence in the general population suggests that self-compassion (SC) may protect against experiencing PD. Consequently, this review aims to systematically explore the role that SC plays with depression, anxiety and PTSD in FR. Searches were conducted on five electronic databases: PsychINFO, MEDLINE, Web of Science, Scopus and Google Scholar, with 122 studies identified. There were seven studies published between 2016 and 2023, from seven different countries and across four continents, that met the criteria and were subsequently included in the review. Risk of bias was assessed by two reviewers using a standardised quality assessment tool. Four correlational studies provided information on the relationship between SC and depression, anxiety and PTSD in FR, whilst the remaining three intervention-based studies explored the impact of SC interventions on SC, depression, anxiety and PTSD in FR. Whilst quality of studies varied, two consistent findings were revealed. The first was that there appears to be a significant relationship between SC and depression, anxiety and PTSD in FR; specifically, lower levels of SC predicted increased symptoms of depression, anxiety and PTSD. Secondly, SC interventions appear to be effective in increasing SC and reducing symptoms of depression, anxiety and PTSD. The findings tentatively indicate a relationship between SC and depression, anxiety and PTSD in FR, alongside the possible clinical utility of SC interventions. However, due to a minimal evidence base, and poor quality of some of the included studies, there is an urgent need for further studies to examine the relationship between SC and depression, anxiety and PTSD in

FR, as well as investigating the possible effectiveness of SC interventions to treat FR experiencing depression, anxiety and PTSD symptoms and low SC.

1.1 Introduction

1.1.1 Prevalence of mental health disorders

Mental health disorders are amongst the leading causes of worldwide health burden, with anxiety and depression being the two most disabling mental health disorders (1). The global public health concerns in relation to mental health, include disability, injury, premature death, suicide, economic productivity and unemployment (2).

An estimated 970 million people in the world (13% of the global population) are living with a mental health disorder (3), a statistic that has remained stable since the year 2000 (3). Whilst the Diagnostic and Statistical Manuel of Mental Disorders (fifth edition; DSM-5) separates PTSD from anxiety disorders, The Global Burden of Diseases (GBD) (4) proposed that anxiety disorders including PTSD (31% - 301 million) and depressive disorders (28.9% - 280 million) are the most common mental health disorders experienced. The global prevalence rates of anxiety and depression are therefore estimated to be at 4.9% and 3.8% respectively. Empirical research into prevalence rates supports this figure, whilst also recognising variabilities amongst gender, age, geographical locations, comorbidities and occupations, with prevalence rates of anxiety ranging between 4-8.8%, depression ranging between 3.15-5.2% and PTSD ranging between 2.2-6.1% (5-13).

It is worth noting that the COVID19 pandemic significantly impacted prevalence rates of anxiety and depression, with one meta-analysis reporting the prevalence of anxiety and depression being as high as 25% and 26.8% respectively (14). However, rates for both decreased as the pandemic went on, with final reports after July 2020 reducing to 18.43% for anxiety and 16.94% for depression.

1.1.2 Experiences of mental health disorders in first responders

First responders (FR) provide a range of services and support during critical and emergency situations (15). They include police officers, firefighters, paramedics, and rescue workers (16-18). It is widely accepted that FR are at a heightened risk of developing mental health symptoms and/or disorders due to the repeated exposure to potentially traumatic events (PTE) (19-22). In fact, prevalence rates have been shown to range between 9-10% for depression, 8.5-23.5% for anxiety, and 5-22% for PTSD (17, 23-25). Variance has been attributed to factors including location, type of trauma experienced, type of FR (26), response rate (27), frequency of exposure to traumatic events, social support and years in service (15). Whilst self-report measures have also been tentatively attributed as a reason for variance of prevalence rates (27), the use of validated and standardised measures has shown little variance when pooled together (26). Overall, despite the variance in prevalence rates, FR are consistently recognised at being at greater risk than the general population for developing mental health disorders (15, 26-27).

1.1.3 The psychological treatment of mental health disorders

Psychological interventions are advocated as a first line treatment for depression, anxiety and PTSD in adult populations (28-33). The most widely recognised psychological treatment that is recommended is Cognitive Behaviour Therapy (CBT) due to its extensive evidence base (e.g. 34-39). However, CBT has been criticised for overstating its effectiveness due to publication bias (40), sub-optimal quality of trials (41) and the use of waiting list conditions, which can cause further adverse effects for control groups making the CBT intervention appear more effective (42-43).

Moreover, whilst CBT has demonstrated effectiveness in treating depression, anxiety and PTSD in general populations (44-47), it lacks a strong evidence base demonstrating effectiveness in military or FR populations (16, 48-49). It has been argued that this could be due to the nature and severity of the trauma these populations experience being greater than the general population in regards to the daily working environment (50-51).

Whilst CBT remains the frontline recommended treatment for depression, anxiety and PTSD (29-31), Acceptance and Commitment Therapy (ACT) (52), Mindfulness Based Cognitive Therapy (MBCT) (53), Compassion Focused Therapy (CFT) (54) and Eye Movement Desensitization Reprocessing (EMDR) (55) are alternative interventions growing in their evidence base. ACT has shown to be effective for treating anxiety (56) and depression (57); MBCT for anxiety (58) and depression (59-61); CFT and compassion based therapies for PTSD (62), anxiety (63) and depression (64-65); and EMDR for PTSD (66), anxiety (67) and depression (68-69). However, research into the effectiveness of these alternative interventions focus on the general population and clinical samples, thus highlighting the need for research and trials comparing other treatment models with that of CBT in FR populations.

1.1.4 Theories of compassion

The role of self-compassion (SC) when thinking about mental health disorders has steadily been growing in research and building an evidence base. It has been shown, in both empirical research (70) and systematic reviews (71-72), that low levels of SC are associated with increased symptomology of depression, anxiety and PTSD in the general population and clinical samples. Furthermore, recent evidence suggests that various SC based interventions

can be effective in reducing symptomology of depression, anxiety, stress and burnout in mental health professionals (73-76).

Neff (77), who drew from the Buddhist philosophy of compassion being omni-directional with the self and others (78), refers to SC as how we relate to ourselves when experiencing perceived failure, inadequacy, or personal suffering (79). SC is turning compassion inwards, relating to ourselves with kindness, support and with a non-judgemental understanding when we experience suffering (77). Neff proposed that SC encompasses three separate elements: (1) a kind and understanding response to oneself when experiencing distress, rather than being harsh and self-judging (2) recognising that failure/hardship is a shared common humanity, rather than a separate or isolative experience (3) mindfully acknowledging and accepting the current distress/pain rather than avoiding or overidentifying with it. Whilst these three elements are distinctly separate, Neff argues that they are all part of a collaborative and dynamic system that impact and influence one another. Furthermore, Neff (80) suggests that SC can be conceptualised as being on a bipolar continuum, in that higher levels of SC can protect oneself against negative self-judgement consequences including isolation and depression, therefore promoting better wellbeing and emotional regulation.

In contrast Gilbert (81) defines compassion as "*a sensitivity to suffering in self and others with a commitment to try to alleviate and prevent it*" (page 19). This perspective notes that a person needs to notice, make sense of, and engage with the suffering, whilst cultivating the skills to respond with courage and wisdom in order to ease the suffering (81). It is influenced by Social Mentality Theory (82), Attachment Theory (83) and neurophysiological approaches such as Polyvagal Theory (84). Gilbert's (54) model of

compassion puts forward that there are three flows of compassion, comprising of SC, compassion to others (CtO) and compassion from others (CfO). It is argued that whilst they are all separate forms of compassion, they interact and are influenced by the threat, drive and soothe systems that regulate one's emotions. Overactivation of the threat and drive system is often found in psychopathology (e.g. 85-86), and the model proposes that the soothe system is influenced by attachment processes (82). Thus, secure attachments and greater levels of compassion from caregivers creates a more strongly developed soothe system. This system can instil signs of warmth, and produce more positive emotions such as safeness, calmness, and social connectedness (54; 82; 86). In fact, social safeness and social connectedness have been shown to positively correlate with physical and psychological wellbeing (87) as well as negatively correlating with self-criticism and insecure attachment (88), depression (89) and anxiety (54). Therefore, according to Gilbert (54; 85), a well-developed soothe system can regulate the threat and drive system, thus playing a vital role in improving psychological wellbeing.

1.1.5 Self-compassion

Within the scope of this review, the emphasis will be on SC as this has been the primary research focus that has been shown to be effective in alleviating mental health symptoms from Mindfulness Based Stress Reduction (MBSR) (75), Compassion Focused Imagery (90), Mindfulness Self-Compassion (76) and Compassionate Mind Training (91) in the general population. Furthermore, a meta-analysis of 27 randomised control trials (RCT) examining the effectiveness of SC interventions in the general population reported significant improvements in depression, anxiety, SC, stress and self-criticisms (92). However, another meta-analysis (93) found that although SC interventions did improve PTSD symptoms, they did not greatly improve SC nor did levels of SC influence PTSD symptom

improvement. The authors proposed that this may be due to methodological issues with a third of studies demonstrating low quality, including small sample sizes, selection bias, and the use of non RCT's. Whilst overall this is promising, there is a need to look outside of the population based research, such as FR, to understand the role that SC plays with depression, anxiety and PTSD, as they are a recognised population at risk of developing mental health difficulties (15, 19-20; 26-27), and experience low levels of SC (94).

1.1.6 Aims of the current review

While there is some evidence that has explored the role that SC plays in depression, anxiety and PTSD (17; 25-27) in the general population, coupled with the potential efficacy of SC interventions (75-76), there is a need to explore the role that SC plays with mental health in less researched populations. More specifically, there are no reviews to date that have systematically explored the role that SC plays with depression, anxiety and PTSD among FR. Consequently, this review aims to answer the following question: What is the relationship between SC and depression, anxiety and PTSD in FR?

1.2 Methodology

1.2.1 Protocol

This systematic review was completed in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (95). It was registered with the international Prospective Register for Systematic Reviews (PROSPERO) on 26/10/2023 (CRD42023427956).

1.2.2 Eligibility criteria

The eligibility criteria (Table 1) included quantitative studies focusing on FR that were published in peer reviewed journals, that were written (or accessible) in the English

language, with a specific focus on exploring the relationships between SC, depression, anxiety and/or PTSD. Papers were only included if they used the validated Self-Compassion Scale (SCS; 96), a validated measure of depression, anxiety and/or PTSD, and had an explicit analysis of the key aforementioned variables. As with other systematic reviews in similar research areas (97-100), this review decided to exclude grey literature in order to maximise identification of high quality peer reviewed studies.

Table 1.

Inclusion and exclusion criteria used for screening process

Inclusion criteria	**Exclusion criteria**
Published peer reviewed literature.	Unpublished grey literature (i.e. dissertations or theses).
Empirical design.	Books, book chapters, articles, commentaries, letters, editorials, guidelines, dissertations, theses, grey literature, reviews and conference or meeting abstracts.
Written (or accessible) in the English language	Not written (or accessible) in the English language

Inclusion Criteria	Exclusion Criteria
Where FR are qualified police personnel, firefighters, paramedics and rescue workers (or a mix of these populations).	Where samples are of any other occupation, e.g. nurses, doctors, healthcare workers, trainees, etc. Papers excluded if there were a mix of FR with other occupations and whereby the groups were not analysed separately.
Neff's validated self-compassion measure: SCS (full, short or translated-forms).	Does not include Neff's validated SCS. Measures for mindfulness, compassion to/from others or resilience will be excluded if the SCS is not used alongside them.
A validated measure of depression, anxiety or PTSD (e.g. PHQ-9, GAD-7, PCL-5, DASS-21).	No validated measure of depression, anxiety or PTSD. Measures of stress, general wellbeing or other measures similar will be excluded if there is no validated measure of depression, anxiety or PTSD used alongside them.

Inclusion Criteria	Exclusion Criteria
Quantitative (e.g. cross-sectional or intervention studies).	Qualitative design.
Explicit analysis on the relationship between SC and depression, anxiety and/or PTSD in the eligible participant sample (or if it can obviously be identified with the results).	The analysis on the relationship between SC and depression, anxiety and/or PTSD in the eligible participant sample is missing, not commented on or not explicitly discussed (or if the relationship is not obviously identified).

1.2.3 Information sources

Scoping searches on PROSPERO and Google Scholar took place on 26/06/2023. Following this, five electronic bibliographic databases (PsychINFO, MEDLINE, Web of Science [core collection only], Scopus and Google Scholar) were searched for relevant, eligible and published literature. No time limits were set for the publication date, and the search took place between 30/10/2023 and 06/11/2023.

1.2.4 Search strategy

The search strategy was planned, reviewed and piloted with an expert librarian. The search terms were planned and agreed following terms identified during the scoping search and discussions in supervision. A consistent search strategy was employed across all databases.

Key words used to search for the first area of interest included "self-compassion" OR "self compassion" OR "compassion for oneself" OR “love and kin*”. The subject heading/descriptor for this area was “self compassion”. Key words used to search for the second area of interest included "mental health" OR "mental* ill*" OR "mental* disorder*" OR "psychiatric ill*" OR "psychological well-being" OR “psychological distress” OR “distress” OR "anxi*" OR "depress*" OR "trauma*" OR "PTSD". Subject headings/descriptors for this area of interest included “distress”, “major depression”, “anxiety”, “post traumatic stress disorder”, “trauma”, “wellbeing” and “mental health”. Key words used to search for the population of interest included "emergency service*" OR "emergency service personnel" OR paramedic* OR "para medic*" OR “police” OR “firefighter*” OR "fire fighter*" OR "first responder*" OR "emergency respon*" OR "ambulance personnel". Subject headings/descriptors for this population of interest included “police personnel”, “emergency personnel”, “law enforcement personnel”, “firefighters”, “first responders”, “rescue workers”, “emergency services” and “paramedics”. Boolean Operator’s ‘OR’ and ‘AND’ were used to combine search terms in order to obtain the final set of results. See Appendix B for the individual search strategies and syntax used for each individual database.

1.2.5 Selection process

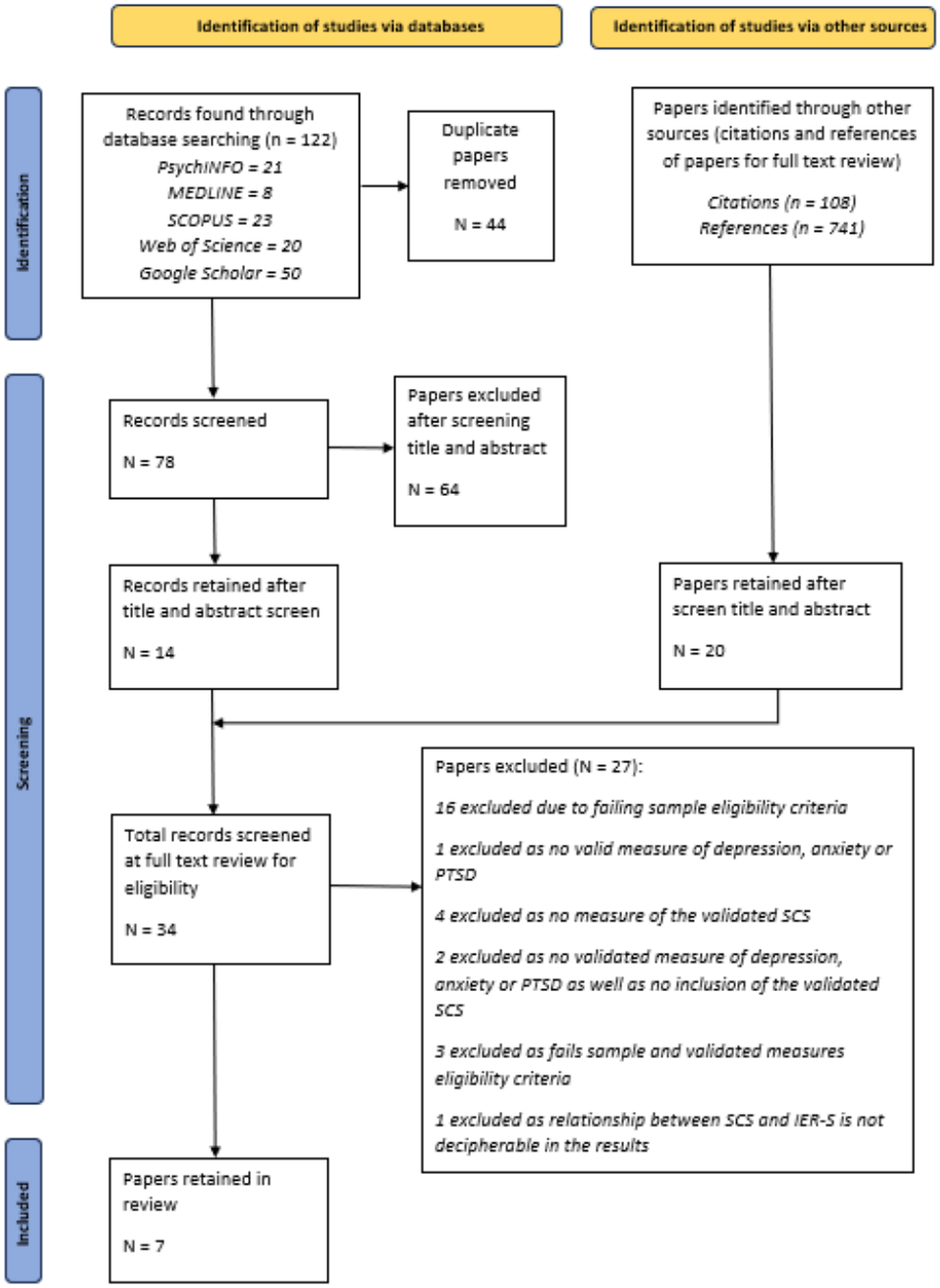
The screening and selection of papers adhered to the PRISMA guidelines (101). This involved screening the titles and abstracts, then full texts in accordance with the eligibility criteria (see Table 1). To reduce bias a second reviewer independently screened 10% of titles and abstracts of randomly selected studies across the five databases to reach an agreement regarding the study eligibility criteria. The inter-rater reliability interpretation (102) showed a strong agreement between the two raters (κ = 0.81, 95% CI, 0.45 to 1.17, p = 0.003). Initially, there was a 92% agreement between the two reviewers, however after discussion this

increased to 100%. In this discussion the full text of the paper was reviewed against the full eligibility criteria. There was a plan in place to consult a third reviewer if a consensus was not agreed, however this was not required.

1.2.6 Study selection

A total of 122 papers were identified through the database searches (see Figure 1 for the PRISMA flow chart). There were 44 duplicate papers removed following the database search. This resulted with a total of 78 papers to screen at the title and abstract review. Following the title and abstract screening 64 papers were excluded due to irrelevance, sample, measures and non-empirical design, resulting with 14 papers being retained for the full text review. The references and citations of these 14 papers were searched, which lead to an extra 20 papers being included for a full text review totalling 34 papers. These papers were screened against the eligibility criteria and papers were excluded for the following reasons: the sample not being FR (n = 16), no validated measure of depression, anxiety and/or PTSD (n = 1), not including the validated SCS measure (n = 4), not including the validated SCS measure along with no validated measure of depression, anxiety and/or PTSD (n = 2), the sample not being FR along with either/or not including the validated SCS measure and not having a validated measure of depression, anxiety and/or PTSD (n = 3), and the relationship between SC and PTSD not being explicit or decipherable/interpretable with the statistical analyses (n = 1). The remaining 7 studies were included for the narrative synthesis (see Fig 1).

Fig. 1 *PRISMA flow diagram (95).*



1.2.7 Data collection process

Table 2 displays the extracted study characteristics and key findings from the relevant studies included in this systematic review.

Table 2.

Study characteristics and key findings from the studies included in this review. The table displays the cross-sectional studies first, followed by the intervention-based studies.

Study (Author, year and country	**Design**	**Sample size**	**Participant characteristics (gender, age, ethnicity)**	**Setting**	***Measures (SC and Mental Health)**	***Summary of key findings/Effect size)**	**Quality assessment score**
Fleischmann et al., (2022). Canada	Cross-sectional	N = 138 police officers	Male = 84 (64.6%), female = 46 (35.4%). Age: 18-24 (0.8%), 25-35 (23.1%), 36-49 (52.3%), 50 + (23.8%). Ethnicity: White/Caucasian (90%), Hispanic (0.8%), Asian (2.3%), Multiracial (2.3%), Other (4.6%).	Recruited via email contact with several police services and organisations across Canada. Recruited also via social media (Twitter & Facebook). Study completed via an online survey	SCS-SF & DASS-21	Significant moderate (and approaching moderate) negative correlations between self-compassion and anxiety and depression meaning low SC is associated with higher symptoms of anxiety and depression. Anxiety = (r = -.47, p <.01) Depression = (r = -.65, p <.01) No effect sizes reported. *B* value reported in Table 2 but this isn't an effect size.	.73 (Good)

Study (Author, year and country	**Design**	**Sample size**	**Participant characteristics (gender, age, ethnicity)**	**Setting**	***Measures (SC and Mental Health)**	***Summary of key findings/Effect size)**	**Quality assessment score**
Harnett et al., (2023) Australia	Cross-sectional	N = 506 police officers	Male = 50.9% (258), female = 48.1 % (248). Age: 20-30 (10.7%), 31-40 (21.5%), 41-50 (37.9%), 51-60 (20.6%), Over 60 (9.3%). Ethnicity not reported	Online survey advertised through a social media campaign conducted by a registered charity (unnamed).	PCL-5, DASS-21, SCS-SF	Significant negative moderate relationship found between PTSD & SC and between depression and anxiety & SC. PTSD = (r = -.50, p <.01) Depression & Anxiety = (r = -.55, p <.01) Therefore increased symptoms of PTSD, depression and anxiety are moderately associated with lower levels of SC No report of effect size or standard errors.	.91 (Strong)

Study (Author, year and country	**Design**	**Sample size**	**Participant characteristics (gender, age, ethnicity)**	**Setting**	***Measures (SC and Mental Health)**	***Summary of key findings/Effect size)**	**Quality assessment score**
Kaurin et al., (2018) Germany	Cross-sectional	N = 123 firefighters	Mean age = 34.49 Male = 123 (100%) Ethnicity not reported	Recruited via leaflets in a fire brigade. Participants completed questionnaires in person at the brigade	SCS-D, PHQ-9-D These are both validated German measures of the original SCS and PHQ-9.	Negative significant relationship between self-compassion and depressive symptoms (β = -2.72, t = 2.18, p = .031) Two way significant negative interaction between SC and self-criticism with depressive symptoms (β = -1.58, t = -2.89, p = .005) Three way significant negative interaction between SC, self-criticism and cumulative PTE's (β = -1.34, t = 2.51, p = .013) but only when <SC, ^self-criticisms and ^cumulative exposure to PME's No effect size or power reported	.91 (Strong)

Study (Author, year and country	**Design**	**Sample size**	**Participant characteristics (gender, age, ethnicity)**	**Setting**	***Measures (SC and Mental Health)**	***Summary of key findings/Effect size)**	**Quality assessment score**
McDonald et al., (2021) Western USA	Cross-sectional	N = 171 first responders. Law Enforcement/Police (39%), Fire department (36%), Trauma Intervention Programme (18%), Emergency Medical Services (12%), Multiple Organisations (10%).	Male = 125 (73%), female = 46 (27%). Age: 18-29 (17%), 30-39 (30%), 40-49 (32%), 50+ (22%). Ethnicity: White or Caucasian (92%), Other (8%).	Volunteer and professional first responders (requiring minimum of 1 experience responding to emergency call). Recruited via mass emails to organisation leaders (fire, police, trauma intervention services). Participants completed online survey.	SCS-SF, DASS-21, PCL-5	Greater self-compassion predicts lower psychological distress. (β = − .51, *SE*(β) = .07, p < .001) Greater self-compassion predicts lower levels of PTSD. (β = − .49, *SE*(β) = .07, p < .001) Greater SC protects against depression, anxiety and PTSD in first responders. Effect size only reported when explaining the studies power. The study had more than a sufficient sample size to obtain 80% power to detect medium effect size. This enabled confidence with results identifying clinically meaningful results.	1.00 (Strong)

Study (Author, year and country)	Design	Sample size	Participant characteristics (gender, age, ethnicity)	Setting	*Measures (SC and Mental Health)	*Summary of key findings/Effect size)	Quality assessment score
Beaumont et al., (2016) United Kingdom (UK)	Intervention Non-randomised TF CBT verses TF-CBT+CFT	N = 17 firefighters	Male = 12 (70.6%), females = 5 (29.4%) Group 1 – TF-CBT (n=8) mean age = 41.3 (27-55) Group 2 – TF-CBT + CFT (n=9) mean age = 43.2 (25-54) No descriptives table – ethnicity not reported.	Recruited via a fire service referring participants to the study. TF-CBT = up to 12 weeks. TB-CBT with CFT up to 12 weeks. All sessions 60mins except first and last sessions which were 90 mins. TF-CBT followed cognitive model for PTSD and delivered by an EMDR European and BABCP accredited CB psychotherapist. CFT also introduced alongside TF-CBT for group 2	SCS-SF, HADS, IES-R	Combined TF-CBT with CFT more effective in increasing SC scores than just TF-CBT (F (1,14) = 7.014, p = .05, η^2 = .334) No tests reported but means appear to show that both TF-CBT and TF-CBT+CFT reduce depression, anxiety and PTSD scores. All results appear to show a relationship with increased self-compassion and reduced depression and anxiety pre-post intervention.	.54 (Adequate)

Study (Author, year and country	**Design**	**Sample size**	**Participant characteristics (gender, age, ethnicity)**	**Setting**	***Measures (SC and Mental Health)**	***Summary of key findings/Effect size)**	**Quality assessment score**
Navarrete et al., (2022) Spain	Intervention Non-randomised pilot trial of: Mindfulness Based Intervention (MBI) - Mindfulness to Promote Police Well-being.	N = 62 police officers (N = 38 completed) Drop out rate = 38.7%.	Mean age for MBI group = 39 (30-51) Mean age for WL group = 41.06 (30-52) Gender: male = 23 (61%), female = 15 (39%). Ethnicity not reported	Recruitment advertised via social networking and advertisements in Police stations across Valencia. Participants interested to take part emailed the researcher and assigned to intervention group or wait list (not stated how assigned to which group). Intervention group was 8x2 hour sessions	SCS-SF, DASS-21	MBI training showed increases in self-compassion and decreases in depression and anxiety. SC = (F = 5.77, p = .02, ηp^2 = *.15*) D = (F = 9.70, $p < .01$, ηp^2 = .23) A = (F = 7.31, p = .011, ηp^2 = .18) Medium-large effect sizes reported, but recognition that study is underpowered	.79 (Good)

Study (Author, year and country)	Design	Sample size	Participant characteristics (gender, age, ethnicity)	Setting	*Measures (SC and Mental Health)	*Summary of key findings/Effect size)	Quality assessment score
Trombka et al., (2021) Brazil	RCT Intervention MBHP (Mindfulness Based Health Promotion) v Wait list. Those on WL then offered MBHP after 6 months	N = 170 police officers (N = 121 completed 6 month follow up). Drop out rate = 28.8%.	Mean age = 42.26 Male = 43 (25.3%), female = 127 %74.7%) Ethnicity not reported	Recruitment within two police institutions, advertised on the internet, social media and posters. Eligible and interested participants randomly (sealed envelopes) assigned to 1 of 2 groups.	HADS, SCS (full version)	MBHP led to improved anxiety and depression scores at post intervention and at 6 month follow up Depression (F (1, 336) = 24.46, p < .001) (F (1, 356) = 13.43, p < .001) Anxiety (F (1, 315) = 15.33, p < .001) (F (1, 339) = 17.19, p < .001) Those who attended MBHP increased in SCS scores, which also mediated the relationship with improvements on WHOQOL (Bref) for the psychological domain. (b = 1.33 (0.32), Ba CI 95% [0.78, 2.03]; R^2 = .47) ^ greater self-compassion associated with improved psychological health	1.00 (Strong)

Note. USA = United States of America. PTSD = Post-Traumatic Stress Disorder. SC = Self-Compassion. PCL-5 = PTSD Checklist for DSM-5. DASS-21 = Depression Anxiety and Stress Scale. SCS = Self-Compassion Scale. SCS-SF = Self-Compassion Scale Short-Form. SCS-D = Self-Compassion Scale German Version. HADS = Hospital Anxiety and Depression Scale. IES-R = Impact of Events Scale-Revised. PHQ9-D = Patient Health Questionnaire German Version. WHOQOL (Bref) = The World Health Organisation Quality of Life Brief Version. MBI = Mindfulness Based Intervention. WL = Wait List. MBHP = Mindfulness Based Health Promotion. TF-CBT = Trauma Focused Cognitive Behavioural Therapy. CFT = Compassion Focused Therapy. EMDR = Eye movement desensitization and reprocessing. BABCP = British Association for Behavioural and Cognitive Psychotherapies. CB = Cognitive Behavioural.

1.2.8 Quality assessment and risk of bias

To assess the methodological quality all the studies included in this review, two reviewers independently followed the Standard Quality Criteria for Evaluating Primary Research from a Variety of Fields (SQAC; 103). This assessment tool has been used in several systematic reviews covering a broad range of topics (99; 104-107). The tool assesses methodological quality over 14 items: question/objective, study design, subject selection, subject characteristics, randomisation, blinding for study participants, blinding for researchers, classification bias and assessment methods, sample size, analysis method, an estimate of variance for main results, control of confounding factors, detail of results, and conclusions. Each item is scored on a 3-point scale (yes = 2, partial = 1, no = 0), though some items can be non-applicable (i.e., if not an interventional study). Total scores are then converted into a percentage. The definitions and cut off scores for the quality rating scores were strong >80%; good = 70-80%; adequate = 50-69%; limited <50% (103; 107). When a discrepancy between assessment scores was present, the reviewers reached a conclusion by discussing each item. If a consensus had not been agreed, a plan was in place to consult a third reviewer, however this was not required.

1.2.9 Synthesis methods

A meta-analysis was considered, however due to several reasons around methodological limitations and diversity of the papers, it was deemed not feasible to accurately analyse the findings, reflecting recommendations in literature of when a meta-analysis is and is not possible (108-110). Reasons included 1) multiple different study designs 2) inclusion of non-randomised control trials which had a recognised increased risk of bias 3) varying methodological issues meaning pooling the data would not have possible (i.e. multiple different statistical analyses ran which meant that some did not directly analyse the

relationship between SC and depression, anxiety and PTSD in FR). A narrative synthesis was considered instead. This would allow to make use of the best available evidence and avoid concluding no knowledge was known on the area (111). It would ensure that all available evidence where not possible to calculate standardised effect sizes would be included (110). Furthermore it would permit incorporating and making sense of evidence from heterogenous studies, thus including context and complexity (111). A narrative synthesis therefore was chosen to answer the research question: What is the relationship between SC and depression, anxiety and PTSD in FR?

1.3 Results

1.3.1 Study characteristics

The seven studies were all published in peer-review journals between 2016 and 2023 from seven different countries: Australia (112), Brazil (113), Canada (114), Germany (115), Spain (116), the United Kingdom (UK) (117), and the United States of America (94). Four were of a cross-sectional design (94; 112; 114-115), whilst the remaining three were intervention-based designs. This included one RCT (113), and two non-randomised studies (116-117). Four studies (112-114; 116) recruited police officers, two (115; 117) recruited firefighters, and one (94) recruited a mix of police officers, firefighters, paramedics, and crisis support workers.

1.3.1.1 Cross-sectional studies

The four cross-sectional studies had similar methodologies but different methods of analyses. Sample sizes ranged between 123 (115) to 506 (112). Three studies recruited via social media and email communications with services and conducted their studies online

(94; 112; 114), whilst Kaurin et al. (115) recruited via leaflets and conducted their study in person.

In consideration of the demographic data, ages ranged between 20 years and 60+ years, with the majority of participants being male and ranging between 36-50 years (94; 112; 114-115). Ethnicities were only reported in two studies (94; 114). The samples comprised solely police officers (112; 114), firefighters (115), or a combination of different first responders (94), with police officers and firefighters composing of 75% of this sample.

1.3.1.2 Intervention based studies

The three intervention-based studies varied in methods and analyses. Sample sizes ranged between 17 (117) and 170 (113). All three studies were conducted in person, however two studies failed to report exactly where the interventions took place (113; 117). Recruitment varied across all studies, including via referrals from one fire service (117), social networking and advertisements across multiple police stations (116), and social media and posters in two police institutions (113). Some studies reported a high dropout rate (113 - 38.7%; 116 = 24.7%), with a further 4% not completing a six month follow up (113), whereas Beaumont et al., (117) reported no drop out.

Mean ages ranged between 39 years (116) and 43.2 years (117). Whilst males ranged between 25.3% (113) to 70.6% (117), the overall majority of participants across the intervention-based studies were female (65.3%, n = 147). None of the studies reported information on ethnicities. The samples were either police officers (113; 116) or firefighters (117).

1.3.2 Measures of self-compassion

The Self-Compassion Scale (SCS; 96) is a validated 26 item measure of SC. It measures cognitions and emotions associated with compassionate and uncompassionate responses on six domains: self-kindness, self-judgement, common humanity, isolation, mindfulness and over-identification. The SCS has been shown to have excellent internal reliability ($\alpha = 0.92$) and test-retest reliability ($\alpha = 0.93$) (118). The SCS has been validated in other languages, including in German (SCS-D; 119), which has also been shown to have excellent internal reliability ($\alpha = 0.91$) test-retest reliability ($\alpha = 0.92$) (119).

The Self-Compassion Scale Short Form (SCS-SF; 120) is a validated a shortened 12 item version of the SCS, still measuring the six domains. Whilst the reliability of the subscales is lower (118), overall the SCS-SF has demonstrated consistent good internal consistency ($\alpha = \geq 0.86$) and near perfect correlation with the full 26 item SCS ($r \geq 0.97$) (120), thus it is a reliable alternative to the full SCS when looking at overall SC scores.

Of the seven studies Trombka et al., (113) used the full SCS, Kaurin et al., (115) used the SCS-D, and the remaining five used the SCS-SF (94; 112; 114; 116-117).

1.3.3 Depression and anxiety measures

The Depression Anxiety Stress Scale (DASS-21) is a validated 21 item measure of depression, anxiety and stress (121). It has three subscales that each comprise of seven items. It has been validated in clinical and general populations in several countries around the world (122-125), and is accessible in 42 languages (126). It has demonstrated excellent reliability ($\alpha = 0.93$) (126), and good internal consistency for both depression ($\omega = 0.86$) and anxiety ($\omega = 0.82$) (127).

The Hospital Anxiety and Depression Scale (HADS) is a validated 14 item self-report measure of anxiety and depression (128). The two subscales of anxiety and depression each have 7 items. It has demonstrated good internal consistency for both anxiety (α = 0.89) and depression (α = 0.86) (129) and acceptable test-retest reliability (α = 0.78) (130).

The Patient-Health Questionnaire (PHQ-9) is a validated 9 item self-report measure of depression (131). It has been shown to have good internal consistency (α = 0.89) and test-retest reliability (α = 0.84) (131). The PHQ-9 has been validated in other languages, including the German version which has also shown good internal consistency (α = 0.87) (132).

All seven studies included in this review measured depression and anxiety. Four used the DASS-21 (94; 112; 114; 116), two used the HADS (113; 117) and whilst Kaurin et al. (115) used the German version of the PHQ-9.

1.3.4 PTSD measures

The Post-traumatic stress disorder checklist for the DSM-5 (PCL-5) is a validated 20 item self-report measure of PTSD symptoms (133). It has demonstrated excellent internal consistency in both military (α = 0.95) (134) and civilian populations (α = 0.95) (135).

The impact of events scale - revised (IES-R) is a validated 22 item self-report measure of PTSD symptoms (136), and has consistently demonstrated good-excellent internal consistency (α = 0.86-0.95) (137-138).

Three studies included in this review measured PTSD, with two using the PCL-5 (94; 112), and the other using the IES-R (117).

1.3.5 Risk of bias

A detailed risk of bias for each study can be seen in Appendix C.

1.3.5.1 Cross-sectional studies

The quality of the cross-sectional studies ranged between .73 and 1.00 using the SQAC (103) (see Table 2), indicating good to strong methodological quality. All studies used standardised and validated measures of SC, depression, anxiety and/or PTSD that were sufficiently described and referenced to. Only McDonald et al., (94) provides information on exclusion criteria. The samples across the four studies consist of mainly police officers and firefighters, therefore there could be potential bias in terms of recruitment and subsequent findings being specific to these two FR professions. Kaurin et al., (115) specifically recruited firefighters from one fire brigade in one German city, which could also indicate a risk of potential bias.

Only McDonald et al., (94) calculated power and describes having a sufficient sample size, however the remaining three (112; 114-115) all appear to have an adequate sample size given the nature and purpose of their research. Two studies report controlling for confounding (94; 115), whilst the other two either partially control for confounding (112), or do not provide any information about this (114). All studies report results in sufficient detail.

1.3.5.2 Intervention based studies

The quality of the intervention-based studies ranged between .54 to 1.00 using the SQAC (103) (see Table 2), indicating adequate to strong methodological quality. It is noted however that the non-randomised studies (116-117) had lower quality rating scores than the RCT study (113). All studies used standardised and validated measures of SC, depression, anxiety and/or PTSD that were sufficiently described and referenced.

Trombka et al. (113) calculated and reported power, and a sufficient sample size was employed. The sampling method, significant findings, control for confounding and results

were all reported in thorough detail, along with detailed information on randomisation and single blinding. However, the remaining two (116-117) appear to lack power and sample size, with both studies not reporting either of these details. Due to insufficient power and sample size both studies had a lack of significant results, though they both did describe in sufficient detail the results they did find. Both reported to have controlled for confounding, but neither reports on blinding. Non-randomisation is acknowledged by Navarrete et al., (116) but not by Beaumont et al., (117).

1.3.6 Narrative synthesis

This synthesis will review in separate sections the impact of different methodological approaches. The focus of the cross-sectional studies provide evidence on the relationship between SC and depression, anxiety, and PTSD in FR. Whereas the intervention-based studies do not directly provide evidence, but do infer that a relationship is present based on the impact that SC interventions have on SC, depression, anxiety and PTSD in FR.

1.3.6.1 Cross-sectional studies

1.3.6.1.1 Relationship between SC and depression in FR

Correlation based research found a significant moderate negative relationship indicating that as SC increased, levels of depression decreased (114 – r = -.65, p < .01; 112 – r = -.55, p <.01). In support of these findings, using regression analysis a significant negative relationship between SC and depression was reported (115 - β = -2.72, t = 2.18, p = .031; 94 - β = − .51, SE(β) = .07, p < .001). In the multiple regression analysis (94), depression was measured alongside anxiety using the DASS-21. The 11 predictors explained 33% of the variance in psychological distress (R^2 = .33, F (11, 159) = 7.19, RMSE = .85, p < .001), and the lack of SC was the biggest contributor and strongest predictor of psychological distress. In

the stepwise regression analysis (115), depression was measured using the PHQ9-D. The final model consisted of 5 main effects, three two-way interactions, and one three-way interaction, which explained 44% of the variance in depression (R^2 = .436, F(1, 107) 18.66, p < .001). Whilst SC was the least contributor and predictor of depression in the final model, it did have a significant main effect (β = -2.72, t = 2.18, p = .031), two-way interaction effect (β = -1.58, t = -2.89, p = .005) and three-way interaction effect (β = -1.34, t = -2.51, p = .013). Both these findings reported that low levels of SC predicted higher scores of depression. Overall, the findings indicate that FR with low SC are likely to experience increased depressive symptoms and supports the transdiagnostic application of SC interventions to treat depression.

1.3.6.1.2 Relationship between SC and anxiety in FR

Correlation based research found a significant moderate negative relationship indicating that as SC increased, levels of anxiety decreased (114 - r = -.47, p <.01; 111 - r = -.55, p <.01). In support of these findings, a regression analysis reported a significant negative relationship between SC and anxiety (94 - β = − .51, SE(β) = .07, p < .001). This multiple regression measured anxiety alongside depression and found that SC was the greatest contributor and strongest predictor (of 11 predictors) of psychological distress. Overall, the findings indicate that FR with low SC are likely to experience increased anxiety symptoms and supports the transdiagnostic application of SC interventions to treat anxiety.

1.3.6.1.3 Relationship between SC and PTSD in FR

Correlation based research found a significant moderate negative relationship indicating that as SC increased, levels of PTSD decreased (112 – (r = -.50, p <.01). In support of these findings, a regression analysis reported a significant negative relationship between

SC and PTSD (94 - β = − .49, *SE*(β) = .07, $p < .001$). In this multiple regression the 11 predictors explained 33% of the variance in PTSD (R^2 = .33, F (11, 159) = 7.12, RMSE = .85, $p < .001$), with SC being the biggest contributor and strongest predictor of PTSD. Overall, the findings indicate that FR with low SC are likely to experience increased PTSD symptoms and supports the transdiagnostic application of SC interventions to treat PTSD.

1.3.6.2 Intervention based studies

1.3.6.2.1 Effectiveness of interventions incorporating SC

Significant increases in SC were found for TF-CBT+CFT (117 - F (1,14) = 7.014, p = 0.05, η^2 = 0.334), and for MBI (116 - F (1,33) = 5.77, p = .02, ηp^2 = .15). Significant reductions in depression and anxiety were found for the MBI (116) (F (1,33) = 9.70, $p < .01$, ηp^2 = .23; F (1,33) = 7.31, p = .011, ηp^2 = .18), but not for TF-CBT+CFT when compared to TF-CBT (117). It is not reported whether TF-CBT+CFT or TF-CBT were individually effective in significantly reducing depression, anxiety, or PTSD scores. In contrast, Trombka et al., (113) found significant reductions in depression (F (1, 336) = 24.46, $p < .001$), anxiety (F (1, 315) = 15.33, $p < .001$), and psychological quality of life (F (1, 298) = 33.72, $p < .001$) after the MBHP intervention as well as at follow up (depression - F (1, 356) = 13.43, $p < .001$; anxiety - F (1, 315) = 15.33, $p < .001$; psychological quality of life - F (1, 309) = 13.38, $p < .001$). Furthermore, the MBHP also showed that SC was the only factor that significantly mediated the relationship between the MBHP and pre and post changes in all areas of quality of life, including the psychological domain (b = 1.33 (0.32), Ba CI 95% [0.78, 2.03]; R^2 = 0.47). This suggested that SC influenced the greater changes in quality of life following the MBHP, with greater SC leading to greater increases in all areas of quality of life. The findings from all these studies infer a relationship between SC and depression and anxiety, as SC

interventions demonstrated effectiveness in increasing SC and quality of life, and reducing symptoms of depression and anxiety.

1.4 Discussion

1.4.1 Summary of main findings

There were two main findings from this systematic review; the first indicated that there is a relationship between SC and depression, anxiety and PTSD in FR. More specifically, lower levels of SC were observed to predict higher rates of depression, anxiety and PTSD (94; 112; 114-115). Secondly it was found that SC interventions are effective at increasing SC (113; 116-117) and reducing symptoms of depression and anxiety in FR (113; 116).

1.4.2 The relationship between SC and depression, anxiety and PTSD in FR

Consistent findings were found across all the cross-sectional studies included in this review (94; 112; 114-115); as SC increased, symptoms of depression, anxiety and PTSD decreased. The findings therefore showed that SC was an important factor strongly predicting better outcomes for depression, anxiety and PTSD. Whilst these findings support Neff's theory of how SC can promote better mental wellbeing (80), as well as supporting and contributing to a growing evidence base where this association has been found in general and clinical populations (70-72), it is important to consider why the National Institute for Health and Care Excellence (NICE) guidelines currently do not recommend compassion interventions to treat depression, anxiety and PTSD (29-31). The NICE guidelines were implemented to improve clinical effectiveness of treatments and consistency across all National Health Service (NHS) trusts (139) in the UK; and to date CBT has the most extensive evidence base supporting its clinical effectiveness in treating depression, anxiety and PTSD (34-39). The guidelines promote patient choice, however despite some alternative's to CBT

being recommended, including EMDR, Counselling, Mindfulness and Interpersonal Psychotherapy (IPT) (29-31), CBT remains the dominant choice of treatment, with compassion interventions remaining absent from the recommended therapies. A possible explanation for this could be that SC interventions have only over the last six years had an increase in clinical research (79), and despite evidence demonstrating their effectiveness, there is a lack of RCT comparing the effectiveness with the gold-standard of CBT (100). This therefore highlights a need for these trials that may enable compassion interventions to become a recommended treatment for depression, anxiety and PTSD if they can demonstrate their clinical effectiveness compared to CBT.

SC interventions were mainly found to be effective for increasing SC (117) and reducing symptoms of depression and anxiety (113; 116). These findings support two previous meta-analyses (100; 140), and research with military and clinical populations (75-76; 90-91; 141), whilst also providing new insights into the effectiveness of SC interventions with FR. When thinking about making sense of these findings, it is helpful to consider the theories of SC. Gilbert (81) introduced the three systems model, which includes the threat, drive and soothe system. The model suggests that learning to activate the soothe system through strategies including mindfulness and breathing exercises helps regulate the threat system. It does this by helping foster positive feelings such as safety and containment and increases compassion to oneself. Whilst Neff often has a contrasting view of SC to Gilbert, Neff (79) also proposes that being able to respond to one's own suffering mindfully and with kindness helps improve SC and resilience. When considering FR, their day to day working environment involves frequent exposure to high stress and PTE (142), with an increased likelihood of experiencing negative physical and mental health consequences. During these times, their threat and drive systems are overactivated, and their soothe system is reduced

(54). Interventions cultivating SC promote activation of the soothe system, and with findings showing support for SC interventions promoting increasing psychological wellbeing in FR, it supports the important role that of SC plays in psychological wellbeing.

However, Beaumont et al. (117) did not find the SC intervention to significantly improve depression, anxiety and PTSD symptoms compared to TF-CBT. These findings must be taken with caution due the studies low sample size, low power, and high risk of bias. It is possible that both interventions were effective in reducing depression, anxiety and PTSD when exploring the differences between pre and post scores, however, the study failed to test whether each intervention was clinically effective in reducing depression, anxiety and PTSD by themselves.

It is important to acknowledge, that there may have been confounding factors that contributed to these findings. Some of the intervention-based studies had high dropout rates (113; 116). Dropout in research can be common, but it can also threaten the validity of results and can bias findings (143). Research has shown that possible reasons for dropout include difficulty managing psychological distress/symptoms (144), however reasons can also include symptom improvement (145). It is possible therefore that the findings from the studies with high dropout rates were not reflective of the whole originally recruited sample and could therefore be biased into showing the effectiveness of the MBI and MBHP interventions, so caution is advised when interpreting these findings.

All the studies in this review used a version of Neff's SCS (96) to measure levels of SC. Whilst the SCS has been used to explore the link between SC and depression, anxiety and PTSD in clinical samples and the general population (15; 26-27), the SCS remains under scrutiny of whether it is truly a valid measure of SC (146). This is based on how the total SCS

and SCS-SF score measures both the compassionate self (self-kindness, common humanity and mindfulness) and the uncompassionate self (self-judgement, isolation and over-identification). Critics have argued that including the uncompassionate self-items in the total score is problematic as they represent a vulnerability, not a protection (147-149). This subsequently inflates the inverse association between SC and psychopathology (147), and therefore the use of the total SCS score makes research on SC as a protective variable more unclear and complicated (150). However, Neff (80) responded by arguing that SC is conceptualised as being on a bipolar continuum from the uncompassionate self to the compassionate self. Neff argued that higher SC protects oneself against the negative uncompassionate self-concepts, which promotes better mental wellbeing. Neff also highlighted that empirical evidence from a meta-analyses of 27 RCT's (92) found improvements in all six subscales of the SCS following SC training, as well as improvements with mental wellbeing. In contrast, Gilbert (81) proposed that SC was only one element of compassion itself, and that compassion flows in three directions: SC, CtO and CfO, all of which influence each other, and so developed the Compassion Engagement and Action Scale (CEAS; 151) to capture all aspects of compassion together. However, Neff (80) argued that the SC part of the scale does not actually measure kindness or common humanity as a feature of SC. Whilst this continued debate has raised questions over the validity of the SCS, the SCS has an overall strong and consistent evidence base (92) indicating it to be a reliable measure of SC.

1.4.3 Strengths, limitations and future research

A strength of this systematic review is that this is the first review that has examined the relationship between SC and depression, anxiety and PTSD in FR, as well as being able to identify potentially effective interventions. It is now becoming widely acknowledged that FR

are at an increased risk of mental health difficulties compared to the general population (25), and that interventions cultivating SC can lead to improvements in mental health symptoms (92). This review's strong narrative synthesis bringing together results from seven studies, provides a new understanding and interpretation of the important role that SC plays with depression, anxiety and PTSD in FR, with real clinical implications and future research directions. Furthermore, this review adhered to the PRISMA guidelines (95), thus providing transparency and replicability.

The review highlights that the studies were conducted in seven different countries and cultures around the world. Whilst there may be issues with lack of representation and generalisability of gender (152), age and ethnicity, and whilst each study only provides one piece of research for each of the seven countries, what this review does provide is evidence suggesting that the role that SC plays with depression, anxiety and/or PTSD in FR could be universally experienced.

There are some limitations to consider when interpreting the findings. Firstly, there were various methodological issues including small sample sizes, low power, high risk of bias and lack of controlling for confounding factors, identified in several studies (114; 116-117). This reduces the reliability and validity of findings (153), therefore interpreting their results requires caution. Moreover, there is a lack of consistency in regards to the type, length, location and delivery of the interventions, specifically it is unclear where the intervention took place for Beaumont et al., (117). Secondly, the cross-sectional and correlational nature of four of the studies synthesised in this review limits the ability to draw causal inferences (154). Thirdly, the quality of the studies ranged from adequate to strong, including non-randomised studies that were low in quality (116-117). However, due to the low number of

studies identified in the search, this systematic review chose to include all seven in order to try to identify the relationship from the available research. It does highlight the need for an increase in better quality research and controlled studies to be employed, so that this research question can be re-examined, and potentially, with more robust methodologies including: reduced bias, less heterogeneity, and consistent study designs and analyses, results could be pooled together in a meta-analysis. Furthermore, if future research focuses on the clinical effectiveness of SC interventions, adopting a RCT design, causal inferences could be determined, which may then have greater clinical implications for treatment.

This review solely looked at studies using the SCS (96), which is based on Neff's (77) theory of SC. As aforementioned earlier, Gilbert (81) argues that SC is only one element of how compassion can be understood, and developed the CEAS (151) to measure the three components of compassion. The CEAS has shown to be promising, important and a useful tool for understanding and assessing the three flows of compassion in veterans (99), adolescents (155) and family carers (156). Future research therefore could use the CEAS to better our understanding of how the three flows of compassion play a role in the psychological wellbeing of FR, expanding our knowledge from beyond SC.

Finally, research is particularly limited to a certain pool of FR (i.e. police officers and firefighters), showing a lack of diversity in terms of types of FR. There is additionally a lack of diversity in terms of age, gender and ethnicity, therefore there is a need to research with a deeper cultural lens the associations between compassion and other FR. This includes paramedics, rescue workers, and FR identifying as female and from different ethnic backgrounds.

1.4.4 Implications for clinical practice

It is widely known that FR are at risk for developing mental health difficulties (19-20), however with the current review indicating that high levels of SC being associated with lower symptoms of depression, anxiety and PTSD in FR, it highlights the importance of screening for levels of SC in FR too. Moreover promising findings revealed SC interventions to be effective for increasing SC and reducing symptoms of depression, anxiety and PTSD, thus suggesting the potential effectiveness in offering compassion-based interventions to FR. Based on the findings of this review clinicians should start screening for SC alongside mental health symptoms with FR in order to inform possible treatments. If FR have low SC and high symptoms of depression, anxiety and/or PTSD, there is rationale to offer evidence-based interventions that incorporate cultivating SC (e.g. CFT and MBI), with which SC could be evaluated using the SCS (96) and/or the CEAS (151). However, it is acknowledged there is a need for higher quality and controlled research into compassion-based interventions in FR. This is in order to increase our understanding and contribute to the evidence base of the effectiveness of compassion-based interventions for increasing SC and reducing mental health symptoms.

1.4.5 Conclusions

This systematic review aimed to synthesise and critique the available research that investigated the relationship between SC and depression, anxiety and PTSD in FR. The review has synthesised the promising evidence suggesting that there is a potential relationship, with higher SC being associated with lower depression, anxiety and PTSD symptoms. This review has also shown that interventions that incorporate SC can have positive effects in increasing SC and reducing depression, anxiety and PTSD symptoms in FR. However, future research needs to be conducted to increase the evidence base available, and to generate

better methodological quality of research in order to provide a greater understanding, not only on the relationship, but also on what interventions can and/or will be effective in supporting our FR with their SC and mental health.

1.5 Acknowledgements

Firstly I would like to thank the several librarians who supported me with refining my search terms for this systematic review. Your advice, time and effort, and support was greatly appreciated. I would also like to thank my fellow peer Kathryn McAree for your constant support throughout the writing of this systematic review and for being the second reviewer as part of the quality assessment. Being able to talk through the challenges really helped me feel contained and was paramount in my ability to complete this research.

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Chapter 2: An Investigation into Moral Injury, the Facets of Compassion, and Burnout in UK Police Officers and Firefighters

Journal Specification: The 'PLOS ONE' journal was selected to guide the preparation of this paper. The author guideline (Appendix A) state that there are no restrictions on the word count, font, amount of tables, or figures. Guidelines request double line spacing, Vancouver referencing, and table formatting is different to APA7.

Word count: 8,806 (excluding tables, figures, references, appendices and acknowledgements).

Abstract

This study investigated the relationship between psychological difficulties (PD), post-traumatic stress disorder (PTSD), alcohol use, the inhibitors of compassion (shame, self-criticisms, and fears of compassion [FoC] to self, others and from others), the facilitator of compassion (self-reassurance), and the three flows of compassion on moral injury (MI) and burnout in police officers and firefighters in the United Kingdom (UK). A cross-sectional design using an online survey was used to measure these variables. A total of 125 participants (92% males) completed measures of MI, burnout, PD, PTSD, shame, alcohol use, FoC, self-criticisms and self-reassurance, and the three flows of compassion. Bivariate correlations and a hierarchal multiple regression were employed to determine the relationships between PD, PTSD, alcohol use, the facets of compassion (inhibitors, facilitator and three flows), burnout and MI, and whether the three flows of compassion predicted MI after controlling for all other aforementioned predictors. Burnout, PD, shame, self-criticisms, FoC and the three flows of compassion were all significantly related to MI. PTSD, self-criticisms, self-compassion and compassion from others were all significantly related to burnout. Only compassion towards others and compassion from others significantly predicted MI after accounting for all other variables. However, PD and years in service were revealed to be the biggest predictors of MI in UK police officers and firefighters. This study proposes that more years in service and experiences of PD are risk factors for MI in UK police officers and firefighters. Additionally, with evidence supporting a relationship between the facets of compassion and PD with MI in UK police officers and firefighters, there is scope for the possible use of compassion within interventions designed to treat MI. Furthermore,

findings support the need for police and fire services to routinely screen for MI alongside burnout, alcohol use, PD, PTSD and the facets of compassion.

2.1 Introduction

2.1.1 Moral injury

Moral injury (MI) is a type of psychological trauma that can develop from violating one's own moral beliefs, or from being betrayed by, or witnessing, trusted individuals execute atrocities (1-3). Experiences that may lead to the development of MI are known as potentially morally injurious experiences (PMIE) (1). Common symptoms of MI include intense feelings of guilt, shame, frustration, betrayal, and self-criticisms (4-6), as well as a struggle with forgiveness and a loss of trust in oneself, others, or deity (7). It is also common to experience additional psychological problems including depression, anxiety, intrusive thoughts, post-traumatic stress disorder (PTSD), and alcohol misuse (8-11). However, not everyone exposed to PMIE will develop MI. It has been proposed that self-esteem, support systems, forgiveness, and self-compassion (SC) may protect individuals from experiencing MI (3; 12-13).

Despite an increased acknowledgement and understanding of MI, it is not recognised as a mental health condition (13). When originally proposed, some questioned whether MI was a theoretically different construct from PTSD (3), however there now appears to be an agreement that whilst there is a compelling overlap between MI and PTSD, including aetiology (both can occur from the result of a threat to life), and symptomology (e.g. intrusive thoughts, nightmares flashbacks, avoidance, depression, shame) (14-15), they are two distinct constructs (8). Namely, PTSD is a recognised DSM-V fear or threat-based mental disorder, resulting after a direct or indirect threat to life, and is associated with emotions experienced during the event, especially fear. (3). Whereas, MI is not a recognised mental disorder, it can result from direct or indirect threat to life and/or direct or indirect threat to

core moral beliefs, and it is more commonly associated with emotions such as shame or guilt that develop after the event (14-15). This is supported from research highlighting differences in neuropsychological mechanisms of MI and PTSD (14), as well as the development of questionnaires that measure MI and PTSD separately (16). Due to the compelling overlap between MI and PTSD, early systematic reviews (8) and meta-analyses (17) have found a positive relationship between them, with higher rates of MI predicting higher rates of PTSD. However, because they are distinct constructs, research also shows that whilst they can co-occur together, they can also occur independently from one another (14-17).

2.1.2 MI & police officers and firefighters

MI was a term originally associated in the military population, and so there is a strong evidence base with veterans (18). Over more recent years, other occupations including healthcare professionals and first responders (FR) have been recognised as being at high risk for experiencing PMIE and developing MI due to their frequent exposure to PMIE (13; 19-22). The COVID19 pandemic resulted with increased pressures on FR, including increased exposure to PMIE, stigma, and demand on facing (and needing to make decisions on) ethically and morally challenging situations (23-24), for example, balancing personal safety with duty of care, and enforcing visitation policies that could leave people dying alone. However, currently there is a lack of evidence exploring the impact of MI in police officers and firefighters in the United Kingdom (UK).

2.1.3 Compassion

It is important to note that compassion is described in many different ways. Neff's (25) focus is on SC. This is the ability to relate to distressing feelings with self-kindness, mindful awareness, and common humanity (26). This is viewed as a positive ability that

supports positive self-esteem, identity, emotional regulation, and self-empathy, and which also can protect oneself against adverse consequences including self-criticism, self-judgement, rumination, isolation, self-disgust and shame (25; 27). Emerging evidence in the general population supports this, suggesting that SC may indeed promote psychological wellbeing, reducing high rates self-criticism and depressive symptoms (28-31).

2.1.4 Three flows of compassion

In contrast to Neff, Gilbert (32) proposes that SC is only one element of compassion, and defines compassion as "*a sensitivity to suffering in self and others, with a commitment to try to alleviate and prevent it*" (p. 19). Developing compassion therefore involves being able to notice, make sense of, and experience suffering, as well as being able to respond with wisdom, courage, and commitment with an aim to decrease or inhibit distress (32). Moreover, unlike Neff's (25) theory, Gilbert argues that compassion is not simply for oneself but involves others.

Gilbert (32) theorises that compassion flows in three different ways: SC, compassion towards others (CtO) and compassion from others (CfO). Furthermore, these three flows have a tri-directional flow with one another and contribute to the systems that regulate our emotions (33): the 'Threat', the 'Drive' and the 'Soothe" systems, which is depicted in Gilbert's three system model. Each of these systems will affect the nature of a person's thinking, attention, emotion, motivation, and behaviour (34-35). Although the three flows of compassion interact and influence each other, they all function independently. For example, a person can be compassionate towards others yet struggle to be compassionate to themselves (36). This means therefore that interventions must have a focus of targeting and growing each flow equally, to effectively support improving mental health difficulties (37).

Early evidence with the general population (38-40), and one study with FR (41), have suggested that high SC and CtO may protect experiences of poor mental health. It is important to note however, that very little is understood about the influence of the three flows of compassion with UK police officers and firefighters.

2.1.5 Fears of compassion

Although there is a growing evidence base highlighting how cultivating compassion can lead to better mental health (40-43), it is important to recognise how there can be blocks, fears and resistances towards the concept of compassion (37). With Gilbert's (32) theory being influenced by Social Mentality Theory (44), Attachment Theory (45), and neurophysiological theories including Polyvagal Theory (46), it helps with the understanding of why there can be many reasons a person may struggle with compassion. This can include early abuse/neglect from caregivers (47), viewing compassion as a weakness (48), unprocessed grief (35), and being highly self-critical and experiencing high feelings of shame (49). These blocks, fears or resistances therefore can maintain a person's mental health difficulties (48) and inhibit engagement with the three flows of compassion. In fact, in a recent meta-analysis, fears of compassion (FoC) were shown to strongly associate with depression, shame and self-criticism (50). Furthermore, self-criticism has been shown to be associated with poor mental health, whilst self-reassurance (SR) has been shown to be associated with good mental health (51). It is important therefore to understand whether a person may fear compassion as this may mean they are likely to struggle with engaging in interventions that target cultivating compassion.

Though the evidence is sparse, when thinking of FR, particularly police officers, it is important to consider how attitudes towards the police and the attitudes they hold towards

suspects and offenders may lead to blocks, fears, and resistances to compassion. Over the last few years attitudes towards the police have become increasingly hostile from the public and the media following multiple controversial incidents (52-53). The distrust and hostility towards police officers can lead to holding negative attitudes towards the public and/or offenders (54). In fact, police officers have been reported of withholding compassion based on a persons suspected illegal activity (55). Alongside this, police officers (56) and other FR (41; 57) have been shown to experience reduced SC and increased psychological distress and self-criticisms. Therefore, the complicated relationship with the public, alongside high rates of experiencing psychological distress and self-criticisms, makes it seem possible that police officers could develop difficulties with experiencing compassion. Of note, police officers are often perceived in a more negative way compared to other FR including firefighters who are often perceived as heroes (58). One might expect that there would be differences in experiencing FoC and the three flows of compassion between police officers and other FR, however this is an area that has not been explored before.

2.1.6 Burnout and alcohol use

Burnout is an interchangeably used term with compassion fatigue, due to congruent experiences of physical and psychological exhaustion (59). However, they are two distinct constructs and it is important to distinguish the differences between the two. Burnout involves the experience of emotional exhaustion (feeling depleted of one's own emotional and physical resources), depersonalisation/cynicism (experiencing negative or detached responses to work), and professional inefficiency (increased feelings of inadequacy and incompetence in one's own abilities), following prolonged exposure to emotional and interpersonal stressors (60-61). These experiences lead to a person being unable to carry on doing their work due to the demands and perceived depleted personal and work resources.

Compassion fatigue refers to when the emotional cost of caring for others becomes too much (62). It describes the physical, emotional and psychological exhaustion/consequences that can make it seem difficult to perform their jobs, from repeated exposure to working with people suffering from traumatic experiences (59). A key difference between compassion fatigue and burnout is that a person may still feel able to perform their work when experiencing compassion fatigue, though not in the way they would hope to, whereas with burnout they would be unable/struggle to perform their work. Early evidence suggests that compassion interventions could be helpful for reducing feelings of stress and burnout (63), however research is limited, and there appears to be no research into this effect with UK police officers and firefighters.

Research has shown that experiencing burnout also increases the risk of developing psychological difficulties (PD) including depression, anxiety and PTSD (64-65) as well as low levels of SC (66) and increased alcohol use (67-69). FR have been shown to be at an increased risk of alcohol use compared to the general population (70-73) due to the increased exposure to potentially traumatic events. This has been observed following responses to natural disasters including Hurricane Katrina (74), the Oklahoma bombings (75), and throughout the COVID19 pandemic (76). In a recent systematic review, alcohol use was found to be a frequent way of coping for firefighters (77). However, research exploring the prevalence and association between alcohol use with exposure to traumatic events and MI remains scarce in UK police officers and firefighters. This is particularly important as feelings of guilt and shame are common experiences in both MI (14-15) and alcohol use (78).

2.1.7 Police officers, firefighters, MI, burnout & compassion

The exposure to PMIE in the line of duty is a prevalent aspect of police and firefighter work (20). During these moments they are often required to make critical decisions that may violate their own moral values (79). Evidence suggests that these types of experiences can lead to the development of MI, burnout, PD (11), increased absenteeism, and leaving the profession early (80-81).

Whilst evidence is sparse exploring MI, burnout and compassion in FR, a cross-sectional study of 454 police officers in Finland has found a relationship between MI and compassion fatigue (6). Lower levels of MI and compassion fatigue significantly predicted higher levels of compassion satisfaction. The authors proposed this may impact the physical and mental wellbeing of police officers, retention and turnover. It is noted however that there is extremely limited evidence on the relationship between MI and burnout.

Early evidence has shown consistent support for SC protecting against poor experiences of mental health in the general population (38; 40), veterans (12) and FR (41). Across all of these studies, increased SC reliably predicted reduced symptoms of depression, anxiety and PTSD. In fact, the evidence has suggested the potential clinical utility of SC interventions across all these populations (12; 38; 40-41). Moreover, for veterans (12), SC was revealed to moderate the relationship between the exposure to PMIE and PTSD, depression and self-harm; greater levels of SC reduced the symptom severity of the aforementioned variables. Although this work is promising, there remains a lack of evidence in this area, particularly with UK police officers and firefighters. It is important to understand and gather further evidence in this in order to understand what supportive interventions could be introduced for these high-risk occupations.

It has been proposed that forgiveness to oneself and others can play an instrumental role in a person's experience of MI (3). The rationale for this is that self-forgiveness may enable a person to reclaim a sense of worth, reaffirm with violated personal values, reduce negative psychological impacts, and re-examine the maladaptive beliefs held about the self, others and the world (3). Self-forgiveness also plays a key role in compassion, as it is an ability to foster love and compassion towards the self (82). As mentioned earlier, there is an association between low compassion and increased self-criticism and self-judgement (3), and so part of compassion-based interventions is learning to respond to oneself and others with more with kindness and compassion in order to alleviate suffering (34), thus building skills in forgiveness. Whilst research is limited, it has shown early promise with veterans and clinical populations (83-84). Self-forgiveness has also been observed to associate with lower levels of self-stigma, internalised stigma and less symptoms of depression and PTSD in US firefighters (85). However, research again remains very much in its infancy, with no research in UK police officers and firefighters, and so a greater understanding of these areas is needed before one can understand and consider supportive clinical interventions.

2.1.8 Present study

To the authors knowledge there is no current research that explores the relationship between MI, burnout, and the three flows of compassion in UK police officers and firefighters. Moreover, there is a lack of research exploring the inhibitors and facilitators of compassion in the UK police officer and firefighter populations. Therefore, the current study aims to explore the relationship between MI, burnout, PD, PTSD, alcohol use, the inhibitors of compassion (shame, self-criticisms, FoC), the facilitators of compassion (SR), and the three flows of compassion amongst UK police officers and firefighters.

The hypotheses are:

1) PD, PTSD, alcohol use and the inhibitors (shame, self-criticisms and FoC) of compassion will be positively related to burnout and MI

2) The facilitator (SR) of compassion will be negatively related to burnout and MI

3) There will be a positive relationship between burnout and MI

4) Lower levels of SC and CtO will be associated with higher levels of burnout, self-criticisms, MI, PTSD and PD

5) SC will predict MI after controlling for burnout, PD, PTSD alcohol use, and the inhibitors and facilitators of compassion.

Due to the scarceness in the literature no directional hypothesis could be made between CfO and MI, and CfO and burnout.

2.2 Method

2.2.1 Design

A cross-sectional correlational design was followed to quantitatively explore the research hypotheses. All participants completed the same online survey once. The required sample size was calculated using G*Power (86). For a multiple regression assuming a medium effect size for eight predictor variables with an Alpha value of .05 and a power of .80, a total sample size of 228 would be required to compare groups (114 per group), or 114 would be required to combine the groups.

2.2.2 Participants

In total, 299 participants consented and passed the eligibility screening (Table 3). Of these, 136 completed the survey, with an attrition rate of 54.52%. After cleaning the data (see Data Analysis Section:2.2.5), the total sample was 125; this included 47 police officers and 78 firefighters. The sample comprised 92% males and 8% females, with 92.8% falling into the age ranges of 18-40 years. All participants identified as White British or White Other. Most participants identified as being married (83.2%), followed by single (12.8%), partnered (3.2%), then divorced (0.8%). Most identified as being Christian (35.2%), followed by Muslim (26.4%), Buddhist (14.4%), Hindu (10.4%), Atheist (9.6%), prefer not to say (2.4%) or other (1.6%). The mean years in service was 6.46 (SD = 4.83), ranging between 1-27 years. There were a range of grades or ranks, with the most common being Firefighter (30.4%). All demographic information can be seen in Table 4.

The focus of participants being police officers and firefighters was based on the a lack of research into their two first responder populations, and based on the similarities they share in terms of organised culture. They both work in fast paced environments with a high risk of daily exposure to potentially traumatic events and PMIE being (20; 58). They have similar ethical duties, code of conduct, values (including patient advocacy and safety), systems, policies, duties and responsibilities, and standards of practice (including law), all of which influence their actions (58). A noticeable difference however is how they are viewed by the public, with police officers often perceived negatively and firefighters perceived as heroes (58).

Table 3.

Participant inclusion and exclusion criteria

Inclusion Criteria	**Exclusion Criteria**
Actively serving police officers and firefighters in the United Kingdom (UK).	Retired police officers and firefighters, actively serving police officers and firefighters from outside of the UK, and volunteers for police and fire services (e.g. Police community support officers and special constables)
Has access to a device that uses the internet (e.g. computer, laptop, tablet or phone).	Not having access to a device that uses the internet
Ability to read, write and understand English language	Unable to read, write or understand English language

Table 4.

Demographic Information of Participants

Characteristic	*M (SD)*	Total Sample	
		N	**%**
Gender			
Male		115	92%
Female		10	8%
Age			
18-30		55	44%
31-40		61	48.8%
41-50		7	5.6%
51-60		2	1.6%
Occupation			
Police Officer		47	37.6%
Firefighter		78	62.4%
Rank			
Police Constable		13	10.4%
Crew Manager		11	8.8%
Sergeant		2	1.6%
Senior Fire Officer		1	0.8%
Firefighter		38	30.4%
Group Manager		1	0.8%

Characteristic	*M (SD)*	Total Sample	
		N	**%**
Rank			
Superintendent		1	0.8%
Station Manager		3	2.4%
Watch Manager		11	8.8%
Inspector		18	14.4%
Detective Constable		7	5.6%
Firefighter Control		1	0.8%
White British / White Other		125	100%
Marital Status			
Single		16	12.8%
Married		104	83.2%
Partnered		4	3.2%
Divorced		1	0.8%
Religion / Spirituality			
Christian		44	35.2%
Muslim		33	26.4%
Hindu		13	10.4%
Atheist		12	9.6%
Other		2	1.6%
Prefer not to say		3	2.4%

Characteristic	*M (SD)*	Total Sample	
		N	**%**
Length of time in service	6.46 (4.83)		
0-4 years		44	35.2%
5-10 years		65	52.0%
11-15 years		5	4.0%
16-20 years		8	6.4%
Above 20 years		3	2.4%

2.2.3 Measures

2.2.3.1 Eligibility & demographic questions

Participants completed questions assessing their eligibility to take part. Demographics included age, gender, ethnicity, marital status, religion/spirituality and the eligibility question was whether they were actively working as a UK police officer or firefighter. If they did not meet this criteria (actively working) they were thanked for showing interest but were unable to take part any further. After progressing past the eligibility questions participants were asked for occupational questions, including length of service, grade/rank and the force/area they worked for.

2.2.3.2 The moral injury events scale (MIES)

The MIES (87) (Appendix D) is a self-administered 11 item questionnaire developed to identify signs of MI in the military population, although this has been adapted for other populations including healthcare professionals (88). Scores range from 1 (strongly agree) to 6

(strongly disagree). An example item is “I saw things that were morally wrong”. The wording in item 9 was adjusted in order to be suitable to the participants involved in this study’ this involved replacing “US military” with “Police or Fire service”. Higher scores indicate greater levels of MI. The MIES has shown excellent internal consistency, Cronbach α = .90 (87).

2.2.3.3 The compassion engagement and action scale (CEAS)

The CEAS (37) (Appendix E) assesses the three flows of compassion on separate scales: SC, CtO and CfO. Each scale consists of 13 items on a 10 point Likert scale ranging from 1 (never) to 10 (always). Example items include “I do not tolerate being distressed”, “I direct attention to what is likely to be helpful to others”, and “Others are emotionally moved by my distressed feelings”. Each subscale has two scores (engagement and action). Total scale scores are calculated by the sum of each scale as well as a sum of engagement and action scores. Reverse items are not included in the scoring. Higher scores indicate greater levels of compassion. The CEAS has demonstrated a range of acceptable-excellent internal consistency, Cronbach α = .72-.94 (37).

2.2.3.4 The fears of compassion scale (FCS)

The FCS (89) (Appendix F) assesses fears of compassion (FoC) across the three flows of compassion, therefore provides 3 subscales: 1) Fear of compassion towards self (FCTS) 2) Fear of compassion towards others (FCTO) 3) Fear of compassion from others (FCFO). Each item is rated on a 5 point Likert scale ranging from 1 (don’t agree at all) to 5 (completely agree). Higher scores indicate higher fears of compassion. Example items include “People will take advantage of me if they see me as too compassionate”, “Feelings of kindness from others are somehow frightening”, and “Getting on in life is about being tough rather than compassionate”. In a student sample the FCS has shown acceptable to good internal

consistency, Cronbach α = .72, .80 and .83 for compassion towards others, from others, and towards self (89).

2.2.3.5 The forms of self-criticising/attacking and self-reassuring scale (FSCRS)

The FSCRS (27) (Appendix G) is a self-report questionnaire measuring self-criticism and self-reassurance (SR) across 22 items. The items focus on a person's perception of how they think and feel about themselves when things go wrong. Each item is rated on a 5-point Likert scale ranging from 0 (not at all like me) to 4 (extremely like me). There are three subscales, two for self-criticism and one for self-reassurance: 1) Inadequate self (IS) 2) Hatred self (HS) 3) Reassured self (RS). Examples include "I am easily disappointed with myself", "I stop caring about myself" and "I find it easy to like myself". Higher scores indicate worse outcomes. In clinical samples the FSCRS has demonstrated a range of good internal consistency for all subscales, Cronbach's α = .87-.89 for inadequate-self, α = .83-.86 for hatred-self, and α = .85-.87 for reassured-self (27).

2.2.3.6 The Oldenburg burnout inventory (OLBI)

The OLBI (90) (Appendix H) is a 16 item self-report questionnaire measuring burnout. The items focus on a two subscales of a person's burnout: 1) exhaustion 2) disengagement. Each item is rated on a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). Higher scores indicate higher levels of burnout. Example items include "I find my job to be a positive challenge" and "Sometimes I feel sickened by my work tasks". Reverse coding items are included in the scoring. The OLBI has shown good internal consistency for both subscales, Cronbach α = .79 for the exhaustion subscale and α = .83 for the disengagement subscale (91).

The decision to use the OLBI instead of Maslach's Burnout Inventory Human Services Survey (MBI-HSS; 92), which does have a larger evidence base for burnout research was for two reasons: 1) the OLBI has a growing evidence base of being used in populations including the emergency/healthcare services (90) 2) the MBI-HSS would cost approximately £500 to purchase the license for the estimated required sample size.

2.2.3.7 The clinical outcomes in routine evaluation 10 (CORE-10)

The CORE10 is a commonly used and validated 10 item self-reported screening tool of PD in UK primary care (93) (Appendix I). Items are rated on a 4 point Likert scale ranging from 0 (not at all) to 4 (most or all of the time). Total scores range from 0-40. Example items include "I have felt unhappy" and "I have felt panic or terror". Higher scores indicate higher PD with cut off scores of below 10, 11-14, 15-19, 20-24 and 25 or above representing non-clinical range, mild, moderate, moderate-severe and severe. It has shown good psychometric properties and excellent internal consistency, Cronbach α =.90 (93).

2.2.3.8 The post-traumatic stress disorder checklist (PCL-5)

The PCL-5 (94) (Appendix J) is an established self-report questionnaire that measures symptoms of PTSD consisting of 20 items. It measures symptoms over four subscales: 1) Scales of intrusion (Q1-5) 2) Avoidance (Q6-7) 3) Negative changes in mood (Q8-14) 4), and Over-arousal (15-20), which correspond to the DSM-5 symptom clusters of PTSD. Items are rated on a 5 point Likert scale ranging from 0 (not at all) to 4 (extremely). Example items include "Repeated, disturbing dreams of the stressful experience" and "Feeling distant or cut off from other people". Scores range from 0-80, with higher scores indicate greater symptoms of PTSD with a clinical cut off score of 31-33 being found to reliably identify

severe PTSD symptoms (95). It has demonstrated excellent internal consistency, Cronbach α = .95 (96).

2.2.3.9 The alcohol use disorder identification test (AUDIT)

The AUDIT (97) (Appendix K) is a 10 item self-report questionnaire used to screen alcoholism. It was developed by the World Health Organisation (WHO), and has been modified for use in health social care settings in the UK. Each item rated on a 5 point Likert scale (ranging from 0-4) with total scores ranging from 0-40. Scores of 8 or above indicate harmful alcohol use. An example item is "Have you or somebody else been injured as a result of your drinking?". The AUDIT has consistently shown good internal with a Cronbach α falling in the =.80's (98).

2.2.3.10 The external and internal shame scale (EISS)

The EISS (99) (Appendix L) is a self-report questionnaire used to measure feelings of internal and external shame, consisting of 8 items. Each item is rated on a 5 point Likert scale with responses ranging between 0 (never) to 5 (always)". Examples include "I am unworthy as a person" and "Other people don't understand me". Scores range between 0-32, with higher scores indicating higher shame. The EISS has demonstrated good internal consistency, Cronbach α = .89 (99).

2.2.4 Procedure

The current study received full ethical approval from the University of Southampton Ethics and Research Committee (ERGO ID: 79639; Appendix M) on the 09/08/2023. Participants were recruited via an anonymous survey link and QR code, along with advertisements that were shared on social media platforms including "LinkedIn", "Twitter/X",

and “Instagram”, as well as with the “Firefighters Charity” (Appendix N). The researcher also recruited via contacting several Police and Fire services across the UK.

All participants were required to provide informed consent via the online consent form that was a part of the participant information sheet (Appendix O). They then completed the measures in the following order: demographics and eligibility question, occupation questions, MIES, OLBI, CEAS, FCS, FSCRS, EISS, PCL-5, AUDIT, and CORE-10. The online survey was chosen to maximise accessing and recruiting a more diverse sample, as well as being more cost-effective and time efficient (100). The MIES and OLBI were used as the two priming questionnaires as the aim was to increase the likelihood of participants accessing potential MI and burnout symptoms, beliefs, and/or attitudes that would allow for a greater representation of the relationship between MI with burnout and the flows of compassion (101). Randomisation of questionnaires would not have been able to do this as the order of questionnaires would be different each time (101). Following guidance on self-administered surveys (102), clear instructions were provided before each questionnaire to aid participants understanding and focus. There was a likelihood that fatigue could impact the engagement with the research, so longer questionnaires were administered first (MIES, OLBI, CEAS, FCS and FSCRS).

Participants were provided with several online links and contact details for several support services in the debrief sheet (Appendix P). Upon completing the survey participants were offered the opportunity to enter into a prize draw. It was estimated the study would take between 20-30 minutes to complete.

2.2.5 Data analysis

The analysis was completed using SPSS (Version 29) with statistical significance being set at $p = .05$. The data was screened for missing values, outliers, unusual values, and for bots due to the exceedingly high number of suspected bots identified early on in the recruitment phase. Over 99% of responses in the first survey came within a 72 hour period. Large numbers of response rates within a short space of time, that have strong similarities in their responses, are recognised as extremely suspicious in bot detection (103), therefore decisions were made to close this survey and to not include any of this data in the analysis. A new survey was then launched and monitored with extra bot protection that included additional attention questions. The dataset included for analysis came from only the second survey. ReCAPTCHA scores of less than 0.5 were removed from the analysis, as these scores are considered as the threshold for detecting bots (104). Any responses where completion of the survey was less than 15 minutes were removed, as this was considered as completing the survey in an unrealistic amount of time (105). Any responses where attention questions were failed were also removed, as this is a recognised way of identifying bots (106). Those who completed <88% (<8 measures) of the full set of measures were removed as this would have resulted in 0% CORE-10 data. Following these parameters, the total sample included for analysis was 125 participants. Histograms, scatterplots and boxplots revealed the data met the assumptions of homoscedasticity, normality and linearity. When extreme outliers were identified, logarithmic transformation was attempted but unsuccessful. Therefore, in line with research methods literature, extreme outliers were replaced with the next highest or lowest value not considered to skew the data, this being three standard deviations above or below the mean (107); this occurred for 1.07% of the total values.

Bivariate Pearson correlations examined the relationship between the predictors (demographics, PD, PTSD, shame, alcohol use, self-criticism, SR, FoC – to self, to others, and from others), the three flows of compassion (SC, CtO, CfO), burnout and MI. Bivariate correlations also examined the relationship between burnout and MI. A hierarchal multiple regression examined the contribution of the aforesaid predictor variables on MI. Demographics including age, gender, whether a police officer or firefighter, and years in service were entered at Step 1, burnout, PTSD, PD (CORE-10) and alcohol use were entered at step 2, the inhibitors (shame, self-criticisms and FoC– FCTS, FCTO, FCFO) and facilitators (SR) were entered at step 3, and the three flows of compassion (SC, CtO, CfO) were entered at step 4. The number of variables being controlled for was in order to enhance the validity of the study and limit the influence of other potential confounding variables based on theoretical and conceptual knowledge of MI (4-11; 14-15) and compassion (28-32; 38-41; 50-51).

2.3 Results

2.3.1 Hypothesis 1: PD, PTSD, alcohol use and the inhibitors of compassion will be positively related to burnout and MI

All correlations are reported in Table 5. Bivariate analyses revealed significant positive correlations between MI and PD (r = .699, p <.001), shame (r = .659, p <.001), self-criticisms as indicated by IS (r = .277, p < .001), FCTS (r = .180, p = .044), FCTO (r = .188, p = .035) and FCFO (r = .290, p <.001). These results indicated that police officers and firefighters who experience higher MI are likely to experience increased symptoms of PD, shame, self-criticisms and FoC. Surprisingly PTSD (r = .092, p = .153), alcohol use (r = .008, p = .463) and

self-criticisms as indicated by HS (r = .002, p = .489) were not significantly associated with MI. Effect sizes ranged from small to large.

Bivariate analyses revealed significant positive correlations between burnout and PTSD (r = .222, p = .013) and self-criticisms as indicated by IS (r = .319, p <.001), showing that police officers and firefighters with higher levels of burnout are likely to experience higher levels of PTSD and self-criticisms. Interestingly no other correlations were significant. Effect sizes ranged from small to medium.

Table 5

Means (standard deviations) and Correlational Analyses for Moral Injury and Burnout

	M (SD)	**Moral Injury (*r*) *n* = 125**	**Burnout (*r*) *n* = 125**	**SC (*r*) *N* = 125**	**Cto (*r*) *n* = 125**	**CfO (*r*) *n* = 125**
Demographics						
Years in service	6.46 (4.83)	.415**	.113	-.346**	-.075	-2.99**
Main Predictors						
Psychological Distress (CORE-10)	15.06 (6.35)	.699**	.065	-.575**	-.489**	-.471**
PTSD (PCL-5)	39.37 (9.55)	.092	.222*	.031	-.139	.011

Alcohol Use (AUDIT)	15.21 (6.61)	.008	-.101	-.037	-.379**	.146
Inhibitors of Compassion						
Shame (EISS)	20.66 (4.93)	.659**	.102	-.546**	-.519**	-.529**
Inadequate Self (FSCRS)	19.37 (4.74)	.277*	.319**	-.254*	.094	-.349**
	M (SD)	**Moral Injury (*r*) *n* = 125**	**Burnout (*r*) *n* = 125**	**SC (*r*) *N* = 125**	**Cto (*r*) *n* = 125**	**CfO (*r*) *n* = 125**
Inhibitors of Compassion						
Hatred Self (FSCRS)	9.66 (3.14)	.002	.022	.058	-.108	.068
Fear of Compassion to Self (FCS)	29.98 (7.52)	.180*	.094	-.004	-.131	-.031
Fear of Compassion to Others (FCS)	20.05 (4.00)	.188*	.083	.042	-.236*	.019
Fear of Compassion from others (FCS)	28.01 (9.39)	.290*	.037	-.299**	-.473**	-.242*

Facilitators of Compassion						
Self-Reassurance (FSCRS)	15.86 (3.32)	-.113	-.140	.182*	.098	.223*
Three Flows of Compassion						
SC	67.80 (14.16)	-.712**	-.345**	-	.542**	.767**
	M (SD)	**Moral Injury (*r*) *n* = 125**	**Burnout (*r*) *n* = 125**	**SC (*r*) *N* = 125**	**Cto (*r*) *n* = 125**	**CfO (*r*) *n* = 125**
Three Flows of Compassion						
CtO	72.33 (12.23)	-.528**	.009	.542**	-	.435**
CfO	68.42 (14.73)	-.676**	-.345**	.767**	.435**	-
Moral Injury	30.61 (10.08)	-	.249*	.345**	.009	-.345**
Burnout	40.30 (3.49)	.249*	-	-.712**	-.528**	-.676**

Note. CORE-10 = Clinical Outcomes in Routine Evaluation 10; PCL-5 = The Post-Traumatic Stress Disorder Checklist (PCL-5); AUDIT = Alcohol Use Disorders Identification Scale; EISS =

External and Internal Shame Scale; FSCRS = Forms of Self-criticising/Attacking and Self-reassuring Scale; FCS = Fears of Compassion Scale; CEAS = Compassion Engagement and Action Scale; SC = Self-compassion; CtO = Compassion to Others; CfO = Compassion from Others; OLBI = Oldenburg Burnout Inventory' MIES = Moral Injury Events Scale

*p <.05 (one-tailed)

**p <.001 (one-tailed)

2.3.2 Hypothesis 2: The facilitators of compassion (SR) will be negatively related to burnout and MI

Unexpectedly SR was not found to be significantly associated with either MI (r = -.113, p = .106) or burnout (r = -.140, p = .060).

2.3.3 Hypothesis 3: There will be a positive relationship between burnout and MI

Bivariate analysis revealed a significant positive correlation between MI and burnout (r = .249, p = .005), indicating police officers and firefighters experiencing high MI are likely to experience high levels of burnout. The effect size was small.

2.3.4 Hypothesis 4: Lower levels of SC and CtO will be associated with higher levels of burnout, self-criticism, MI, PTSD and increased PD

Bivariate analyses revealed negative significant correlations between SC and MI (r = -.712, p <.001), burnout (r = -.345, p <.001), PD (r = -.575, p <.001) and self-criticisms as measured using IS (r = -.254, p = .004), indicating that police officers and firefighters with

lower SC are likely to experience increased symptoms of MI, burnout, PD and self-criticisms. Surprisingly, there was no significant correlations found between SC and PTSD (r = .031, p = .366) and self-criticisms as measured by HS (r = .058, p = .260). Effect sizes ranged between small to large.

Analyses also revealed negative significant correlations between CtO and MI (r = -.528, p <.001) and PD (r = -.489, p <.001) indicating police officers and firefighters with lower CtO are likely to experience increased symptoms of MI and PD. Interestingly, no significant correlations were found between CtO and burnout (r = .009, p = .458), PTSD (r = -.139, p = .061) and self-criticisms as measured using IS (r = .094, p = .147) and HS (r = -.108, p = .116). Effect sizes were large.

CfO was also explored, and bivariate analyses revealed negative significant correlations between CfO and MI (r = -.676, p <.001), burnout (r = -.345, p <.001), PD (r = -.471, p <.001) and self-criticisms as measured using IS (r = -.349, p <.001), thus indicating police officers and firefighters with lower CfO are likely to experience increased symptoms of MI, burnout, PD and self-criticisms. However, no significant correlations were found between CfO and PTSD (r = .011, p = .905) or self-criticisms as measured by HS (r = .068, p = .451). Effect sizes were medium to large.

2.3.5 Hypothesis 5: the three flows of compassion will predict MI after accounting for burnout, PD, PTSD, alcohol use, and the inhibitors and facilitators of compassion

A hierarchal multiple regression (Table 6) examined the relationship between the three flows of compassion (SC, CtO, CfO) on MI, whilst controlling for demographics (age, gender, police officer or firefighter, and years in service), burnout, PTSD, PD, alcohol use, the

inhibitors of compassion (shame, self-criticisms, FCTS, FCTO, FCFO) and the facilitator of compassion (SR). The overall model was found to be significant (F (18, 106 = 17.90, p <.001) accounting for 71% of the variance of MI. The model indicated that CtO (β = -.184) and CfO (β = -.197) significantly predicted MI in police officers and firefighters after accounting for age (β = -.099), gender (β = .128), police officer or firefighter (β = .067), years in service (β = .247), burnout (β = .083), PTSD (β = -.168), PD (β = .345), alcohol use (β = -.052), the inhibitors of compassion (shame [β = .157], self-criticisms as measured by IS [β = -.005] and HS [-.048], FCTS [β = .137], FCTO [β = .075], FCFO [β = -.017]) and the facilitators of compassion (SR [β = -.056]). However, the model indicated that SC (β = -.023) did not significantly predict MI after accounting for the aforementioned predictors.

Upon closer inspection of the individual predictors, the regression analysis revealed that the strongest predictor or MI was PD (β = .345), followed by years in service (β = .247), CfO (β = -.197) and CtO (β = -.184). Effect sizes were small.

Table 6

Hierarchal multiple regression analysis predicting MI (N = 125)

Predictor Variables	**Cumulative**		**Simultaneous**						
	R^2 change	***F***	***B***	**SEB**	***β***	***t***	**Sig.**	**sr^2**	**95% CI**
Step 1	.205	*F* (4, 120) = 7.750**							
Age			-5.226	4.139	-.135	-1.263	.209	.011	-13.421 to 2.968
Gender			5.958	3.369	.161	1.769	.079	.021	-.712 to 12.628
PO or FF			2.572	1.763	.124	1.459	.147	.014	-.919 to 6.063
Years in service			.939	.213	.450	4.398	<.001**	.128	.516 to 1.362
Step 2	.427	*F* (8, 116) = 24.900**							
Age			-.1294	2.915	-.033	-.444	.658	.001	-7.067 to 4.479
Gender			2.862	2.563	.077	1.117	.266	.004	-2.214 to 7.939
PO or FF			1.114	1.278	.054	.872	.358	.002	-1.418 to 3.646
Years in service			.507	.154	.243	3.298	.001*	.035	.202 to .811

Predictor Variables	Cumulative		Simultaneous						
	R^2 change	*F*	*B*	SEB	*β*	*t*	Sig.	sr^2	95% CI
Burnout			.534	.181	.185	2.958	.004*	.028	.176 to .892
PTSD			-.143	.072	-.136	-1.976	.051	-.012	-.287 to .000
Psychological difficulties			1.099	.100	.692	10.990	<.001**	.383	.901 to 1.297
Alcohol use			-.056	.098	-.037	-.566	.573	-.001	-.251 to .139
Step 3	.075	*F* (15, 109) = 17.511**							
Age			-2.900	3.013	-.075	-.963	.338	-.003	-8.871 to 3.071
Gender			5.030	2.793	.136	1.801	.074	.009	-.505 to 10.565
PO or FF			1.669	1.237	.082	1.374	.172	.005	-.752 to 4.150
Years in service			.588	.155	.282	3.798	<.001**	.039	.281 to .894
Burnout			.445	.176	.154	2.520	.013*	.017	.095 to .794
PTSD			-.259	.101	-.245	-2.554	.012*	-.017	-.460 to -.058
Psychological difficulties			.670	.132	.422	5.095	<.001**	.070	.410 to .931
Alcohol use			-.035	.094	-.023	-.371	.712	.000	-.221 to .152

Predictor Variables	Cumulative		Simultaneous						
	R^2 change	*F*	*B*	SEB	*β*	*t*	Sig.	sr^2	95% CI
Shame			.592	.181	.290	3.269	.001*	.029	.233 to .951
Inadequate self			-.042	.160	-.020	-.266	.791	.000	-.359 to .274
Hatred self			-.251	.274	-.078	-.917	.361	.002	-.794 to .292
Self-reassurance			-.320	.175	-.106	-1.823	.071	.001	-.668 to .028
Fears of compassion to self			.155	.135	.116	1.145	.255	.003	-.113 to .424
Fears of compassion to others			.145	.181	.058	.804	.423	.001	-.213 to .503
Fears of compassion from others			.112	.088	.104	1.264	.209	.004	-.063 to .287
Step 4	.046	*F* (18, 106) = 17.902**							
Age			-3.850	2.826	-.099	-1.363	.176	-.004	-9.453 to 1.752
Gender			4.747	2.843	.128	1.670	.098	.007	-.888 to 10.383
PO or FF			1.389	1.171	.067	1.186	.238	.003	-.932 to 3.709

Predictor Variables	Cumulative		Simultaneous						
	R^2 change	*F*	*B*	SEB	*β*	*t*	Sig.	sr^2	95% CI
Years in service			.515	.151	.247	3.413	<.001**	.027	.216 to .814
Burnout			.241	.184	.083	1.305	.195	.004	-.125 to .607
PTSD			-.177	.100	-.168	-1.766	.080	-.007	-.376 to .022
Psychological difficulties			.547	.132	.345	4.139	<.001**	.040	.285 to .810
Alcohol use			-.079	.096	-.052	-.822	.413	-.002	-.270 to .112
Shame			.321	.180	.157	1.784	.077	.007	-.036 to .677
Inadequate self			.010	.157	.005	.062	.951	.000	-.302 to .321
Hatred self			-.153	.256	-.048	-.598	.551	-.001	-.662 to .355
Self-reassurance			-.169	.169	-.056	-1.000	.320	-.002	-.503 to .166
Fears of compassion to self			.184	.127	.137	1.452	.149	.005	-.067 to .435
Fears of compassion to others			.190	.173	.075	1.096	.276	.003	-.153 to .533

Predictor Variables	Cumulative		Simultaneous						
	R^2 change	*F*	*B*	SEB	*B*	*T*	Sig.	sr^2	95% CI
Fears of compassion from others			-.019	.091	-.017	-.204	.839	.000	-.199 to .161
Self-compassion			-.017	.078	-.023	-.212	.833	.000	-.172 to .139
Compassion to others			-.152	.064	-.184	-2.383	.019	-.013	-.278 to -.026
Compassion from others			-.135	.060	-.197	-2.259	.026	-.012	-.253 to -.016

Note: sr^2 = small effect size = .02, medium effect size = .13, large effect size = .26

**p <.05 (two tailed)*

***p <.001 (two tailed)*

2.3.6. Post-hoc exploratory analyses

Interestingly, years in service (r = .415, p <.001) was significantly correlated to MI, indicating that those with more years spent working as a police officer or firefighter are likely to experience MI.

2.4 Discussion

2.4.1 Findings in context

The present study aimed to examine the associations between PD, PTSD, alcohol use, the components of compassion as proposed by Gilbert (34) (facilitators, inhibitors, and the three flows of compassion), burnout and MI amongst UK police officers and firefighters. Findings revealed PD, the inhibitors of compassion (shame, self-criticisms and FoC), years in service and burnout were all positively associated with MI, and PTSD and self-criticisms were positively associated with burnout. Interestingly, the facilitator of compassion (SR) was not found to be associated with either MI or burnout. More surprisingly, PTSD and alcohol use were not shown to be associated with MI, and PD, FoC, shame and alcohol use were not associated with burnout. In regard to the three flows of compassion, lower levels of SC, CtO and CfO were found to be associated with higher levels of MI and PD. Lower levels of SC and CfO were associated with increased levels of burnout and self-criticisms. Further results revealed that CtO and CfO predicted MI after accounting for the contributions of demographics (age, gender, police officer or firefighter, years in service), PD, PTSD, burnout, alcohol use, the inhibitors of compassion (shame, self-criticisms, FCTS, FCTO, FCFO), and the facilitator of compassion (SR), however SC did not predict MI after accounting for the aforementioned predictors. Interestingly, this study revealed that PD was the greatest predictor of MI, followed by years in service, CfO and then CtO.

2.4.2 PD, PTSD, alcohol use, FR characteristics, MI and burnout

Previous research has shown a link between experiencing MI and increased symptoms of depression, anxiety, intrusive thoughts, PTSD, and alcohol misuse (8-11). Additionally, research has shown an increased risk of developing depression, anxiety, PTSD (64-65), and alcohol use (68-69) when experiencing burnout. The findings partially support previous research by revealing increased PD was associated with MI, and increased PTSD was associated with burnout. Furthermore, increased burnout was associated with MI. Whilst a link between MI and compassion fatigue has been revealed previously (6), this is the first study to observe and provide novel insights into the link between MI and burnout among UK police officers and firefighters.

Surprisingly, no association was revealed between MI and PTSD, or between burnout and PD. Whilst PTSD is considered a fear and threat-based disorder, MI is more commonly associated with shame (14-15). This could offer a reason why MI did not correlate with PTSD in this study, though conflicts with the vast evidence base highlighting the positive relationship between the two constructs (8-9; 11; 108), which is attributed to the similarities they share in symptomology and aetiology (8). It is possible that there may be other factors moderating the effect between MI and PTSD, and burnout and PD. In fact, increased frequency and greater intensity of PMIE (109), has been shown to increase the risk of MI and burnout. The current study revealed that more years in service increased the likelihood, and was the second largest predictor, of experiencing MI in police officers and firefighters. Whilst some research has proposed that greater experience may mitigate against MI due to an increased ability to adapt and cope (110), findings from the current study suggestions the opposite; that frequent exposure to a PMIE increases the risk of experiencing MI and other co-occurring negative consequences (13; 19-20). Therefore, it is important to consider years in service as a risk factor

for experiencing MI amongst police officers and firefighters. The intensity of a PMIE therefore may explain why no relationship between MI and PTSD was found in this study. Intensity was not something that was measured, and as aforementioned it has been shown to increase the risk of experiencing MI and burnout (109). However, whether the intensity of a PMIE does moderate the relationship between MI and PTSD in police officers and firefighters remains unknown at this time.

It is important to expand on the finding that years in service being a predictor of MI as this was the first study to observe this effect. Findings differ from recent evidence in veterans showing younger age a predictor of MI (111), and years of service not significantly predicting MI in paramedics (112). This is interesting when repeated frequent exposure to PMIE are recognised as a risk factor for experiencing MI (3; 18). There could be several other moderating factors influencing the findings across all studies, including the aforementioned intensity of a PMIE. Other factors could be the finding from the current study of lower levels of SC, CtO and CfO. With these novel findings, it shows there is a need to understand and investigate these effects more.

Remarkably, no association was found between MI and alcohol use, or between burnout and alcohol use. While alcohol use has been an identified risk factor in FR (70-73), and as a common coping mechanism to the repeated exposure to the traumatic events (77), the current study can only partially support previous literature. Although high rates of alcohol use in the current study were revealed, there was no relationship found between alcohol use and MI and burnout. Alcohol use as a coping mechanism is associated with intense feelings of guilt (78), as is MI (14-15), yet there is a high level of stigma felt by those who drink alcohol to cope (113). It is possible that stigma can lead to underreporting of alcohol use (114), therefore the

findings from this study may reflect an underreporting of alcohol use in those experiencing higher symptoms of MI and burnout.

2.4.3 Inhibitors and facilitators of compassion, MI and burnout

Shame, self-criticisms and FoC were found to be associated with MI amongst police officers and firefighters, supporting previous shame and self-criticisms research (6; 14-15), as well as shame-based literature (3). Shame is an emotion that encompasses a global negative view of the self, coupled with feelings of unworthiness, which play a key role in the development of the sense of self and moral behaviour (99; 115). Similarly, shame is recognised as a symptom of MI following the violation of one's own moral values (1-3). There appears to be a possible overlap theoretically (15; 20) and conceptually (2; 4) between MI and shame, and therefore provides a possible explanation to the relationship found in the current study.

It has been proposed that shame is associated with increased self-criticisms, self-hatred, and PD (2-3; 116). Subsequently, this can lead to increased isolation from others (2), with compassion viewed as threatening (117), and individuals holding beliefs of not deserving compassion (118). All of this may lead to developing a FoC (49; 89). This is relevant when considering FR, particularly police officers, whom over recent years have received hostility from the public and media following controversial incidents (52-53). The distrust and hostility that FR are facing offers an explanation to the relationship observed between FoC and MI found in this study.

It has been suggested that SR is a facilitator for compassion (119). This can be understood when relating this to the three systems model (33). In the model the soothe system is associated with periods of rest, peacefulness, safeness, and feeling cared for. SR is a way of activating the soothe system, promoting feelings of safeness and warmth (119), with

research showing SR being associated with reduced depression and anxiety symptoms (51). The findings do not support previous research as they did not show that SR was associated with MI or burnout. This is a novel finding, however a possible explanation could be that participants may have had an overactive threat system leading to a difficulty activating their soothe system (33). It is possible that due to participants experiencing high levels of self-criticism and shame, which are both recognised as potential reasons for developing a FoC (49-50), that they experienced difficulty activating their soothe system (32), and subsequently struggled with SR. However, this is the first study examining this effect in UK police officers and firefighters, and so this provides preliminary insights in this context.

Despite a lack of research into the relationship between burnout and the inhibitors of compassion (shame, self-criticisms and FoC), this study found that self-criticisms (measured by IS) was associated with burnout, namely those experiencing greater burnout were likely to experience higher self-criticisms. Theoretically this makes sense, as burnout involves experiences of emotional exhaustion, depersonalisation, and professional inefficiency (60-61). These experiences have been shown to increase the risk of developing PD including depression, anxiety and PTSD (64-65), and a common symptom of PD is self-criticisms (28; 120). Shame has also been proposed to be linked to burnout due to the feelings of not being able to perform at the level one expects (121); which in turn links to the experiences of professional inefficiency. However, shame was not revealed to be associated with burnout in this study. It may be that self-criticisms influence the relationship between shame and burnout, as evidence suggests there is a relationship between the two (122), although it is noted that this relationship has been found in a different clinical sample. Taking all this into account, findings partially support the hypotheses made in regards to the inhibitors and

facilitators of compassion with burnout and MI, however it is important to recognise that this is the first study examining these associations in UK police officers and firefighters.

2.4.4 The three flows of compassion and MI

It was proposed that MI may occur in FR due to needing to make or follow critical decisions that may violate one's own moral values (79). These decisions may lead to injuries or even loss of life, which can leave FR taking personal responsibility for the event (79). If a person experiences MI and the subsequent feelings of shame and distrust following acts of transgression by oneself or others, it is possible that fears, blocks and resistances to compassion may occur (48-50), which may lead to difficulties with the three flows of compassion. This may explain the current associations found between lower levels of SC, CtO and CfO and increased MI in UK police officers and firefighters.

It has been proposed that SC and CtO can protect against MI (12; 111), as well against PD, self-criticisms and shame (25; 27-28; 31; 38-41). The current findings support and expand on previous research as lower levels of SC, CtO and CfO were all shown to be associated with higher levels of MI and PD. Additionally, lower levels of SC and CfO were associated with higher levels of burnout and self-criticisms. Interestingly PTSD was not associated with any of the three flows of compassion, which may relate to SC not relating or influencing certain symptoms of PTSD (i.e. intrusions, arousal and reactivity (123)). Overall, the findings provide new and important insights into the relationship between the three flows of compassion with MI, PD, PTSD, burnout and self-criticisms in UK police officers and firefighters.

CtO and CfO both predicted MI after accounting for the effects of age, gender, police officer or firefighter, years in service, PD, PTSD, alcohol use, and the inhibitors (shame, self-criticism, FCTS, FCTO and FCFO) and facilitator (SR) of compassion, however SC did not.

Previous research found none of the three flows of compassion predicted MI after accounting for confounding variables (111), however this is the first study examining the role of compassion with MI in police officer and firefighters. It is important to note however that the regression analysis demonstrated that the combined effect of the aforementioned predictors did explain a large proportion of MI in UK police officers and firefighters, highlighting the importance of recognising the links and risk factors for MI in this population. Furthermore, with recent evidence indicating the possible effectiveness of incorporating compassion into interventions supporting veterans with MI (111), there is scope to consider that interventions, such as Compassion Focused Therapy (33), may be potentially utilised and effective for treating police officers and firefighters with MI.

2.4.5 Strengths, limitations and future research suggestions

This is the first study examining the components of compassion, MI and burnout amongst UK police officers and firefighters. The novelty of the findings provides new insights into these associations and contributes to an emerging evidence base (5; 12; 38; 40-41). The studies validity and reliability is strengthened by the inclusion of standardised and validated measures of all constructs (124). Additionally, findings ranged between small to large in effect size, highlighting the studies power. The findings supply further evidence for the understanding of MI as a shamed-based psychological trauma that is associated with PD (8-9) and compassion (3; 12; 111), and supports evidence suggesting the appropriateness and promise of interventions incorporating compassion for treating MI (125).

Despite positive associations between MI and PD being revealed, this study did not find associations between MI and PTSD. This is surprising given the evidence base demonstrating a strong positive relationship between the two (8; 108). It was noted that other factors including

the frequency of exposure to, and the intensity of, a PMIE may influence the relationship between MI and PTSD. There may be additional factors that could contribute to this finding including the participant characteristics; the majority were white and male. Therefore, there may be differences in the rates of MI and PTSD in police officers and firefighters who are female and with other ethnicities. Future research should look to explore whether gender, ethnicity, and whether more frequent exposure to, and a greater intensity of a PMIE do impact the association between MI and PTSD.

Years in service was identified as a predictor or MI. This is a novel finding, which although supports evidence of repeated frequent exposure to PMIE increasing the risk of experiencing MI (3; 18), it contrasts with evidence from veterans (111) and paramedics (112). However, there is limited research in this area, with no consistent evidence across any profession. Whilst it highlights an important need to screen as a potential risk factor, it also highlights a greater need for further investigation to understand whether there are moderating influence onto this relationship and/or whether they are idiosyncratic to each population and study.

The high number of suspected bots is a recognised limitation of the current study. Fraud is increasingly becoming problematic for online survey-based research, which can lead to distorted results and the questioning of data integrity (126-127). Fraudulent responses have been increasing with the rise of social media (128), and possible risk factors for fraudulent responses include financial gain (129). The current study did have potential financial incentives for participants, something that is common in survey-based research (130). However, the present study utilised established methods to identify and remove fraudulent responses. This included recommended precautionary approaches for antibot protection including reCAPTCHA

scores (104) and attention questions (106). Further recommended techniques used to clean the data of fraudulent responses included identifying and removing completed surveys in unrealistic times (105), and removing large numbers of responses that were similar and came within a short space of time (103). As with all studies of this type, it is possible that some responses in the data may be fraudulent due to the advancement in fraudulent responses being able to filter through (103), however, these were kept to a minimum using the aforementioned methods.

The large number of questionnaires and estimated time to complete the survey may have contributed to the high attrition rate in this study. Despite most findings being significant, effects such as fatigue, boredom (131), and professionals with a busy work schedule (132) may have impacted the attrition rate. Financial incentives, including prize draws are recognised ways of preventing dropout (133-134), particularly for long surveys (135). The present study estimated that the time to complete the survey was 25 minutes, and consequently offered an opt-in prize draw. This led to 66% of respondents completing the survey entering the prize draw. Despite the evidence base for MI, burnout and compassion in police officers and firefighters being limited, future research could reduce the amount of questionnaires when investigating these associations to particular variables that are less researched, such as FoC and the three flows of compassion. Alternatively, more personal approaches to recruitment such as telephone or in person invitations should be considered as this has been shown to lead to greater uptake and reduced dropout (136).

Despite the novelty of these findings, this is the first study exploring the relationship between MI, burnout and facets of compassion in UK police officers and firefighters. As this research is of correlational nature, the findings are limited in their ability to draw causal

inferences (137). However, there remains a need of further research to better understand the theoretical and conceptual understanding of MI and burnout with the facets of compassion, PD, PTSD, alcohol use and the inhibitors and facilitator of compassion in police officers and firefighters. This is important in order to explore whether the findings are idiosyncratic to this study and population, and for expanding the evidence base and informing clinical practice. The findings from the current study tentatively indicate a need for future research to begin exploring the possible benefit of compassion-based interventions, which can adopt RCT design to examine their efficacy and effectiveness.

As the generalisability of the findings are limited, it is important that future research looks at other FR populations and occupations recognised at risk of MI, including paramedics, nurses, doctors, teachers, and civilians who have experienced certain types of traumas (79). Furthermore, despite efforts to recruit a diverse sample, the sample was comprised of mainly men and solely of white Caucasian ethnicity, which is not representative of the targeted sample (138-139). Whilst the sample comprised of firefighters and police officers, it is not known whether there are differences between the two professions. Future research should aim to examine these variables in order to better understand MI in these areas.

2.4.6 Clinical implications

The findings cautiously support the use of compassion-based interventions for treating MI and burnout in police officers and firefighters, as compassion-based approaches including Compassion Focused Therapy (CFT), utilise a transdiagnostic approach to increase compassion, reduce shame, PD and self-criticisms, and address FoC (33). Furthermore, it has been proposed that CFT could be an effective treatment for MI (111). Despite SC not predicting MI after accounting for other variables, all three flows of compassion were significantly associated with

MI. Therefore, it is important for police and fire services to routinely screen for the three flows of compassion, using the CEAS (37), as this will help inform which area of compassion to target as part of a therapeutic intervention. With the current study expanding the awareness of MI, burnout, PD and reduced levels of compassion being prevalent in police officers and firefighters (11; 20; 57), it is also important for police and fire services to routinely screen for MI, burnout and PD.

The effectiveness of compassion-based interventions is a growing evidence base, however there is evidence to support its clinical use in treating PD (41; 56) and burnout (140). Together with the knowledge of burnout and the expanding evidence base on the conceptual understanding of MI, services should consider trialling compassion-based interventions amongst FR to evaluate its effectiveness.

2.4.7 Conclusion

The current study provides novel insights into the complex dynamic between various components of compassion, MI and burnout in UK police officers and firefighters. Findings indicate that more years in service and PD are risk factors for MI, and there appears to be a relationship between the facets of compassion (including the three flows of compassion) and MI. Additionally, associated comorbidities with MI include PD, shame, self-criticisms and FoC, and associated comorbidities with burnout include PTSD and self-criticisms. Findings tentatively support possible compassion-based interventions with police officers and firefighters with MI and burnout, though this is a highlighted need for future research. Further research is needed as this has been the first study exploring MI, burnout and compassion in UK police officers and firefighters. Therefore findings need more consideration from both theoretical and research perspectives, in order to understand whether results are idiosyncratic

to this study, and/or police and fire populations. Finally, services should routinely screen for MI, burnout, the facets of compassion, PD, PTSD, alcohol use, as well as considering years in service as a risk factor, with consideration of trialling/using compassion-based approaches as treatments in order to protect the wellbeing of police officers and firefighters.

2.5 Acknowledgements

I would like to thank Dr Jin Zhang for all her advice and support with the online survey based programme Qualtrics. Your knowledge and support was invaluable and very much appreciated. I would like to thank Michelle Wakefield from the West Sussex Fire and Rescue Service, as well as Sharon Bailey from the Firefighters Charity who kindly distributed the studies advertisement as part of the recruitment phase. Additionally, thank you to my fellow peers who also kindly shared the studies advertisement as part of the recruitment phase. Finally, much appreciation goes to all the participant who took the time and effort to engage in this research.

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Appendix A: PLOS ONE Journal Author Guidelines

https://journals.plos.org/plosone/s/submission-guidelines

Appendix B: Individual Search Terms for Each Database

PsychINFO

Dates of search: 30/10/2023

Total number of results: 21

1. Phenomena of Interest: Self-Compassion	
Key Words	S1 "self-compassion" OR "self compassion" OR "compassion for oneself" OR “love and kin*”
Subject Headings	DE “self-compassion”
AND	
2. Outcome of Interest: Depression, Anxiety and/or PTSD	
Key Words	S2 "mental health" OR "mental* ill*" OR "mental* disorder*" OR "psychiatric ill*" OR "psychological well-being" OR “psychological distress” OR “distress” OR "anxi*" OR "depress*" OR "trauma*" OR "PTSD"
Subject Headings	DE “mental health” OR DE “well being” OR DE “trauma” OR DE “post-traumatic stress disorder” OR DE “anxiety” OR DE “major depression” OR DE “distress”
AND	
3. Population if Interest: First Responders	
Key Words	"emergency service*" OR "emergency service personnel" OR paramedic* OR "para medic*" OR “police” OR “firefighter*” OR "fire fighter*" OR "first responder*" OR "emergency respon*" OR "ambulance personnel"
Subject Headings	DE “police personnel” OR DE “emergency personnel“ OR DE “law enforcement personnel“ OR DE “fire fighters“ OR DE “rescue workers“ OR DE “emergency services“ OR DE “paramedics“

MEDLINE

Dates of search: 30/10/2023

Total number of results: 8

1. Phenomena of Interest: Self-Compassion	
Key Words	S1 "self-compassion" OR "self compassion" OR "compassion for oneself" OR “love and kin*”
Subject Headings	DE “self-compassion”
AND	
2. Outcome of Interest: Depression, Anxiety and/or PTSD	
Key Words	S2 "mental health" OR "mental* ill*" OR "mental* disorder*" OR "psychiatric ill*" OR "psychological well-being" OR “psychological distress” OR “distress” OR "anxi*" OR "depress*" OR "trauma*" OR "PTSD"
Subject Headings	DE “mental health” OR DE “well being” OR DE “trauma” OR DE “post-traumatic stress disorder” OR DE “anxiety” OR DE “major depression” OR DE “distress”
AND	
3. Population if Interest: First Responders	
Key Words	"emergency service*" OR "emergency service personnel" OR paramedic* OR "para medic*" OR “police” OR “firefighter*” OR "fire fighter*" OR "first responder*" OR "emergency respon*" OR "ambulance personnel"
Subject Headings	DE “police personnel” OR DE “emergency personnel“ OR DE “law enforcement personnel“ OR DE “fire fighters“ OR DE “rescue workers“ OR DE “emergency services“ OR DE “paramedics“

Web of Science

Dates of search: 03/11/2023

Total number of results: 20

1. Phenomena of Interest: Self-Compassion	
Key Words	S1 "self-compassion" OR "self compassion" OR "compassion for oneself" OR “love and kin*”
AND	
2. Outcome of Interest: Depression, Anxiety and/or PTSD	
Key Words	S2 "mental health" OR "mental* ill*" OR "mental* disorder*" OR "psychiatric ill*" OR "psychological well-being" OR “psychological distress” OR “distress” OR "anxi*" OR "depress*" OR "trauma*" OR "PTSD"
AND	
3. Population if Interest: First Responders	
Key Words	"emergency service*" OR "emergency service personnel" OR paramedic* OR "para medic*" OR “police” OR “firefighter*” OR "fire fighter*" OR "first responder*" OR "emergency respon*" OR "ambulance personnel"

Scopus

Dates of search: 03/11/2023

Total number of results: 23

1. Phenomena of Interest: Self-Compassion	
Key Words	S1 "self-compassion" OR "self compassion" OR "compassion for oneself" OR “love and kin*”
AND	
2. Outcome of Interest: Depression, Anxiety and/or PTSD	
Key Words	S2 "mental health" OR "mental* ill*" OR "mental* disorder*" OR "psychiatric ill*" OR "psychological well-being" OR “psychological distress” OR “distress” OR "anxi*" OR "depress*" OR "trauma*" OR "PTSD"
AND	
3. Population if Interest: First Responders	
Key Words	"emergency service*" OR "emergency service personnel" OR paramedic* OR "para medic*" OR “police” OR “firefighter*” OR "fire fighter*" OR "first responder*" OR "emergency respon*" OR "ambulance personnel"

Google Scholar

Dates of search: 03/11/2023

Total number of results: 335

1. Phenomena of Interest: Self-Compassion	
Key Words	"self-compassion"
AND	
2. Outcome of Interest: Depression, Anxiety and/or PTSD	
Key Words	“psychological wellbeing” OR “depression” OR “anxiety” OR “PTSD”
AND	
3. Population if Interest: First Responders	
Key Words	"first responders” OR “police” OR “firefighters” OR “paramedics”

Appendix C: Risk of Bias Assessment for Each Study

Study: *McDonald et al (2021)*				
Criteria	**Met – Yes (2)**	**Met – Partially (1)**	**Met – No (0)**	**N/A**
1. Question/objective sufficiently described?	Yes. Clear in the introduction			
2. Study design evident and appropriate?	Yes. Evident at the end of the introduction section and in the procedure section of the methodology			
3. Method of subject/comparison group selection or source of information/input variables described and appropriate?	Yes. Clearly defined in participants and procedure sections.			
4. Subject (and comparison group, if applicable) characteristics sufficiently described?	Yes. Sufficient relevant characteristics described in Table 1.			
5. If interventional and random allocation was possible, was it described?				N/A
6. If interventional and blinding of investigators was possible, was it reported?				N/A
7. If interventional and blinding of subjects was possible, was it reported?				N/A
8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Means of assessment reported?	Yes. Clear description in the measures section			

9. Sample size appropriate?	Yes. Sample size calculated and described in participants			
	section. Power reported. Has statistically significant results			
10. Analytic methods described/justified and appropriate?	Yes. Clearly descried and appropriate in data analysis section			
11. Some estimate of variance is reported for the main results?	Yes. Variance and standard errors reported for all results.			
12. Controlled for confounding?	Yes. Clearly stated in the results sections for each result that they were accounting for the influence of other variables			
13. Results reported in sufficient detail?	Yes. Thorough description of results all relevant to the research questions			
14. Conclusions supported by the results?	Yes. Conclusions support results and limitations also acknowledged.			

Total summary score: 28 – (N/A x 3) = 22 **22/22 = 1.00 (Strong)**				

Study: *Navarrete et al (2022)*				
Criteria	**Met – Yes (2)**	**Met – Partially (1)**	**Met – No (0)**	**N/A**
1. Question/objective sufficiently described?	Yes. Clear in the introduction			
2. Study design evident and appropriate?	Yes. Design appropriate and evident from end of introduction and in methodology			
3. Method of subject/comparison group selection or source of information/input variables described and appropriate?	Yes. Detailed well in participant and procedure sections			
4. Subject (and comparison group, if applicable) characteristics sufficiently described?	Yes. Sufficient characteristics available in Table 1			
5. If interventional and random allocation was possible, was it described?			No. Random allocation could have been completed but it was not. Evident in procedure section	
6. If interventional and blinding of investigators was possible, was it reported?				N/A
7. If interventional and blinding of subjects was possible, was it reported?				N/A
8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Means of assessment reported?	Yes. Measures thoroughly described in measures section			
9. Sample size appropriate?		Partial.		

		Recognised small sample size limiting statistical power in limitations section of discussion. Some significant results, effect sizes reported for these.		
10. Analytic methods described/justified and appropriate?	Yes. Thoroughly detailed in data analysis section			
11. Some estimate of variance is reported for the main results?	Yes. Effect sizes reported for all results, evidence in results sections and in tables displaying results of tests			
12. Controlled for confounding?		Partial. Study mentions controlling for the influence of other variables but does not state what or how. Partial eta squared also reported.		
13. Results reported in sufficient detail?	Yes. Detailed results section of all appropriate tests			
14. Conclusions supported by the results?	Yes. All supporting the results and acknowledgement of limitations			
Total summary score: 28 – (N/A x2) = 24 **19/24 = 0.79 (Moderate)**				

Study: *Fleischmann et al (2021)*				
Criteria	**Met – Yes (2)**	**Met – Partially (1)**	**Met – No (0)**	**N/A**
1. Question/objective sufficiently described?	Yes. Clearly defined in the present study section			
2. Study design evident and appropriate?		Partially. Design not explicitly stated but can be identified in the procedure section, though this is not detailed sufficiently design seems appropriate given purpose of study		
3. Method of subject/comparison group selection or source of information/input variables described and appropriate?		Partially. Recruitment descried in participant section, but no details on any inclusion or exclusion criteria		
4. Subject (and comparison group, if applicable) characteristics sufficiently described?	Yes. Detailed characteristics displayed in Table 1			
5. If interventional and random allocation was possible, was it described?				N/A
6. If interventional and blinding of investigators was possible, was it reported?				N/A
7. If interventional and blinding of subjects was possible, was it reported?				N/A
8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification	Yes. Clear description of measures in			

bias? Means of assessment reported?	measure section			
9. Sample size appropriate?		Partially. Insufficient data to assess sample size. Power not detailed, and only some significant results, acknowledging small sample compared to previous studies		
10. Analytic methods described/justified and appropriate?	Yes. Descried and justified in data analysis and results section			
11. Some estimate of variance is reported for the main results?	Yes. Confidence intervals and standard errors provided in table 3 for the moderation analyses			
12. Controlled for confounding?			No. Though a cross sectional survey, no mention of controlling for confounders such as demographics characterstics	
13. Results reported in sufficient detail?		Partially. Results not explained clearly so hard to assess for study hypotheses despite stating they do not		

		support the hypotheses		
14. Conclusions supported by the results?	Yes. Results support conclusion and limitations acknowledged with suggestions for future research to address these			
Total summary score: 28 – (N/A x3) = 22 **16/22 = 0.73 (moderate)**				

Study: *Trombka et al (2021)*				
Criteria	**Met – Yes (2)**	**Met – Partially (1)**	**Met – No (0)**	**N/A**
1. Question/objective sufficiently described?	Yes. Clearly described in the introduction			
2. Study design evident and appropriate?	Yes. Very clear description in the introduction and the design section of the methodology			
3. Method of subject/comparison group selection or source of information/input variables described and appropriate?	Yes. Thoroughly detailed in participant and procedure sections			
4. Subject (and comparison group, if applicable) characteristics sufficiently described?	Yes. Sufficient characteristics displayed in Table 2			
5. If interventional and random allocation was possible, was it described?	Yes. Clearly detailed in the procedure section			
6. If interventional and blinding of investigators was possible, was it reported?	Yes. Independent researcher was responsible for random allocation. Detailed in procedure section			
7. If interventional and blinding of subjects was possible, was it reported?				N/A Described in

				procedure section
8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Means of assessment reported?	Yes. Detailed in the materials and methods section			
9. Sample size appropriate?	Yes. Power calculation and sample size reported in procedure section			
10. Analytic methods described/justified and appropriate?	Yes. Clearly described with rational in the data analysis section			
11. Some estimate of variance is reported for the main results?	Yes. Confidence intervals reported in Tables 3 and 4. Noted medium-large effect size in opening paragraph of discussion.			
12. Controlled for confounding?	Yes. Detailed in the results section and Table 2			
13. Results reported in sufficient detail?	Yes. Thorough description of all major and secondary outcomes in the results			
14. Conclusions supported by the results?	Yes. Clear and consistent with			

	results, with limitations acknowledged			
Total summary score: 28 – (N/A x1) = 26 **26/26 = 1.00 (Strong)**				

Study: *Kaurin et al (2018)*				
Criteria	**Met – Yes (2)**	**Met – Partially (1)**	**Met – No (0)**	**N/A**
1. Question/objective sufficiently described?	Yes. Clear in the present study section at the end of the introduction			
2. Study design evident and appropriate?	Yes. Whilst not explicitly stated, it is clear (in the present study and participants and procedure sections) and appropriate for the purpose of the study			
3. Method of subject/comparison group selection or source of information/input variables described and appropriate?	Yes. Described in the participants and procedure section			
4. Subject (and comparison group, if applicable) characteristics sufficiently described?		Partially. Ages and length of years worked described in participants and procedure section, but no other characteristics described.		
5. If interventional and random allocation was possible, was it described?				N/A
6. If interventional and blinding of investigators was possible, was it reported?				N/A
7. If interventional and blinding of subjects was possible, was it reported?				N/A
8. Outcome and (if applicable) exposure measure(s) well defined and robust to	Yes.			

measurement/misclassification bias? Means of assessment reported?	Thorough description in the measures section			
9. Sample size appropriate?		Partially. No power calculation described. Sample seems appropriate for purpose of study and analysis used.		
10. Analytic methods described/justified and appropriate?	Yes. Detailed well in data analysis section			
11. Some estimate of variance is reported for the main results?	Yes. Variance from regression and confidence intervals reported in results section. Also noted in the last section of the discussion (before implications)			
12. Controlled for confounding?	Yes. Clearly described in the preliminary analysis section			
13. Results reported in sufficient detail?	Yes. Clear description provided			
14. Conclusions supported by the results?	Yes. Appropriately reported and limitations discussed			
Total summary score: 28 – (N/A x3) = 22				

20/22 = 0.91 (Strong)				

Study: *Harnett et al (2021)*				
Criteria	**Met – Yes (2)**	**Met – Partially (1)**	**Met – No (0)**	**N/A**
1. Question/objective sufficiently described?	Yes. Well described in in the introduction			
2. Study design evident and appropriate?	Yes. Clearly evident in the introduction and procedure section			
3. Method of subject/comparison group selection or source of information/input variables described and appropriate?	Yes. Appropriate and described well in participants and procedure sections			
4. Subject (and comparison group, if applicable) characteristics sufficiently described?	Yes. Descried and detailed in participants section and Table 1			
5. If interventional and random allocation was possible, was it described?				N/A
6. If interventional and blinding of investigators was possible, was it reported?				N/A
7. If interventional and blinding of subjects was possible, was it reported?				N/A
8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Means of assessment reported?	Yes. Very clearly described in measures section			
9. Sample size appropriate?	Yes. Though power not calculated and it is a survey of one group, sample			

	size seems appropriate given purpose of research and analysis used. Statistically significant effects also found for major outcomes.			
10. Analytic methods described/justified and appropriate?	Yes. Detailed well in data analysis section and in result section			
11. Some estimate of variance is reported for the main results?		Partially. Variance described for primary aim of research but not sufficiently detailed		
12. Controlled for confounding?		Partially. Though a cross sectional survey of one group, demographics described but acknowledged some differences. Not described if this was further controlled for during the final path model analysis		
13. Results reported in sufficient detail?	Yes. Well detailed for all major outcomes			
14. Conclusions supported by the results?	Yes. Appropriately reported and limitations discussed			

Total summary score: 28 – (N/A x3) = 22 **20/22 = 0.91 (Strong)**				

Study: *Beaumont et al (2016)*				
Criteria	**Met – Yes (2)**	**Met – Partially (1)**	**Met – No (0)**	**N/A**
1. Question/objective sufficiently described?	Yes. Clearly described in the introduction			
2. Study design evident and appropriate?	Yes. Described at end of introduction and in method section			
3. Method of subject/comparison group selection or source of information/input variables described and appropriate?	Yes. Described how recruitment was completed			
4. Subject (and comparison group, if applicable) characteristics sufficiently described?		Partially. Only age and gender reported in participants section		
5. If interventional and random allocation was possible, was it described?			No. Random allocation not described but was feasible and appropriate to do	
6. If interventional and blinding of investigators was possible, was it reported?			No. Blinding would have been possible (may have been done) but not reported	
7. If interventional and blinding of subjects was possible, was it reported?			No. Blinding would have been	

			possible (may have been done) but not reported	
8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Means of assessment reported?	Yes. Whilst not fully described, measures are defined and referenced to in measures section			
9. Sample size appropriate?		Partially	No. Obviously inadequately powered with no statistical significant results comparing groups. Recognition of small sample size in limitation section	
10. Analytic methods described/justified and appropriate?	Yes. Appropriate and described in data analysis and result sections			
11. Some estimate of variance is reported for the main results?			No. No estimate of variance reported	
12. Controlled for confounding?		Partially. Reported in results that ANCOVA was used to control for differences, but no report of controlling for		

		limited characteristics obtained.		
13. Results reported in sufficient detail?		Partially. Whilst major outcomes for comparison of groups reported, authors state significance of effect overall but do not report the statistical results		
14. Conclusions supported by the results?	Yes. Conclusion supports results found and limitations discussed			
Total summary score: 28 – (N/A x0) = 28 **15/28 = 0.54 (adequate)**				

Appendix D: The Moral Injury Events Scale (MIES)

	Strongly Agree	Moderately Agree	Slightly Agree	Slightly Disagree	Moderately Disagree	Strongly Disagree
(1) I saw things that were morally wrong	1	2	3	4	5	6
(2) I am troubled by having witnessed others' immoral acts	1	2	3	4	5	6
(3) I acted in ways that violated my own moral code or values	1	2	3	4	5	6
(4) I am troubled by having acted in ways that violated my own morals or values	1	2	3	4	5	6
(5) I violated my own morals by failing to do something that I felt I should have done	1	2	3	4	5	6
(6) I am troubled because I violated my morals by failing to do something that I felt I should have done	1	2	3	4	5	6
(7) I feel betrayed by leaders who I once trusted	1	2	3	4	5	6
(8) I feel betrayed by fellow service members who I once trusted	1	2	3	4	5	6
(9) I feel betrayed by others outside the U.S. military who I once trusted	1	2	3	4	5	6
10. I trust my leaders and fellow service members to always live up to their core values	1	2	3	4	5	6
(11) I trust myself to always live up to my own moral code	1	2	3	4	5	6

Reference to paper:

Nash WP, Marino Carper TL, Mills MA, Au T, Goldsmith A, Litz BT. Psychometric evaluation of the moral injury events scale. Military medicine. 2013 Jun 1;178(6):646-52. https://doi.org/10.7205/MILMED-D-13-00017

Appendix E: The Compassion Engagement and Action Scales

THE COMPASSION ENGAGEMENT AND ACTION SCALES

Self-compassion

When things go wrong for us and we become distressed by setbacks, failures, disappointments or losses, we may cope with these in different ways. We are interested in the degree to which people can be compassionate with themselves. We define compassion as "a sensitivity to suffering in self and others with a commitment to try to alleviate and prevent it." This means there are two aspects to compassion. The first is the ability to be motivated to engage with things/feelings that are difficult as opposed to trying to avoid or supress them. The second aspect of compassion is the ability to focus on what is helpful to us. Just like a doctor with his/her patient. The first is to be motivated and able to pay attention to the pain and (learn how to) make sense of it. The second is to be able to take the action that will be helpful. Below is a series of questions that ask you about these two aspects of compassion. Therefore read each statement carefully and think about how it applies to you if you become distressed. Please rate the items using the following rating scale:

Never									Always
1	2	3	4	5	6	7	8	9	10

Section 1 – These are questions that ask you about how motivated you are, and able to engage with distress when you experience it. So:

When I'm distressed or upset by things…

1. I am motivated to engage and work with my distress when it arises.

2. I notice, and am sensitive to my distressed feelings when they arise in me.

(r)3. I avoid thinking about my distress and try to distract myself and put it out of my mind.

4. I am emotionally moved by my distressed feelings or situations.

5. I tolerate the various feelings that are part of my distress.

6. I reflect on and make sense of my feelings of distress

(r)7 I do not tolerate being distressed.

8. I am accepting, non-critical and non-judgemental of my feelings of distress.

Section 2 – These questions relate to how you actively cope in compassionate ways with emotions, thoughts and situations that distress you. So:

When I'm distressed or upset by things…

1. I direct my attention to what is likely to be helpful to me.

2. I think about and come up with helpful ways to cope with my distress.

(r)3. I don't know how to help myself.

4. I take the actions and do the things that will be helpful to me.

5. I create inner feelings of support, helpfulness and encouragement.

Compassion to Others

When things go wrong for other people and they become distressed by setbacks, failures, disappointments or losses, we may cope with their distress in different ways. We are interested in the degree to which people can be compassionate to others. We define compassion as "a sensitivity to suffering in self and others with a commitment to try to alleviate and prevent it." This means there are two aspects to compassion. The first is the ability to be motivated to engage with things/feelings that are difficult as opposed to trying to avoid or supress them. The second aspect of compassion is the ability to focus on what is helpful. Just like a doctor with his/her patient. The first is to be motivated and able to pay attention to the pain and (learn how to) make sense of it. The second is to be able to take the action that will be helpful. Below is a series of questions that ask you about these two aspects of compassion. Therefore read each statement carefully and think about how it applies to you when people in your life become distressed. Please rate the items using the following rating scale:

Never Always

1 2 3 4 5 6 7 8 9 10

Section 1 – These are questions that ask you about how motivated you are, and able to engage with other people's distress when they are experiencing it. So:

When others are distressed or upset by things…

1. I am motivated to engage and work with other peoples' distress when it arises.

2. I notice and am sensitive to distress in others when it arises.

(r)3. I avoid thinking about other peoples' distress, try to distract myself and put it out of my mind.

4. I am emotionally moved by expressions of distress in others.

5. I tolerate the various feelings that are part of other people's distress.

6. I reflect on and make sense of other people's distress.

(r)7 I do not tolerate other peoples' distress.

8. I am accepting, non-critical and non-judgemental of others people's distress.

Section 2 – These questions relate to how you actively respond in compassionate ways when other people are distressed. So:

When others are distressed or upset by things…

1. I direct attention to what is likely to be helpful to others.

2. I think about and come up with helpful ways for them to cope with their distress.

(r)3. I don't know how to help other people when they are distressed.

4. I take the actions and do the things that will be helpful to others.

5. I express feelings of support, helpfulness and encouragement to others.

Compassion from Others

When things go wrong for us and we become distressed by setbacks, failures, disappointments or losses, others may cope with our distress in different ways. We are 188 interested in the degree to which you feel that important people in your life can be compassionate to your distress. We define compassion as "a sensitivity to suffering in self and others with a commitment to try to alleviate and prevent it." This means there are two aspects to compassion. The first is the ability to be motivated to engage with things/feelings that are difficult as opposed to trying to avoid or supress them. The second aspect of compassion is the ability to focus on what is helpful to us or others. Just like a doctor with his/her patient. The first is to be motivated and able to pay attention to the pain and (learn how to) make sense of it. The second is to be able to take the action that will be helpful. Below is a series of questions that ask you about these two aspects of compassion. Therefore read each statement carefully and think about how it applies to the important people in your life when you become distressed. Please rate the items using the following rating scale:

Never Always

1 2 3 4 5 6 7 8 9 10

Section 1 – These are questions that ask you about how motivated you think others are, and how much they engage with your distress when you experience it. So:

When I'm distressed or upset by things…

1. Other people are actively motivated to engage and work with my distress when it arises.

2. Others notice and are sensitive to my distressed feelings when they arise in me.

(r)3 Others avoid thinking about my distress, try to distract themselves and put it out of their mind.

4. Others are emotionally moved by my distressed feelings.

5. Others tolerate my various feelings that are part of my distress.

6. Others reflect on and make sense of my feelings of distress.

(r)7. Others do not tolerate my distress.

8. Others are accepting, non-critical and non-judgemental of my feelings of distress.

Section 2 – These questions relate to how others actively cope in compassionate ways with emotions and situations that distress you. So:

When I'm distressed or upset by things…

1. Others direct their attention to what is likely to be helpful to me.

2. Others think about and come up with helpful ways for me to cope with my distress.

(r)3. Others don't know how to help me when I am distressed

4. Others take the actions and do the things that will be helpful to me.

5. Others treat me with feelings of support, helpfulness and encouragement.

NOTE FOR USERS: REVERSE ITEMS (r) ARE NOT INCLUDED IN THE SCORING © Gilbert et al., 2016

Appendix F: The Fears of Compassion Scale

FEARS OF COMPASSION SCALE

Different people have different views of compassion and kindness. While some people believe that it is important to show compassion and kindness in all situations and contexts, others believe we should be more cautious and can worry about showing it too much to ourselves and to others. We are interested in your thoughts and beliefs in regard to kindness and compassion in three areas of your life:

1. Expressing compassion for others

2. Responding to compassion from others

3. Expressing kindness and compassion towards yourself

Below are a series of statements that we would like you to think carefully about and then circle the number that best describes how each statement fits you.

SCALE

Don't agree at all		Somewhat agree		Completely agree
0	1	2	3	4

Scale 1: Expressing compassion for others

1. People will take advantage of me if they see me as too compassionate 0 1 2 3 4
2. Being compassionate towards people who have done bad things is letting them off the hook 0 1 2 3 4
3. There are some people in life who don't deserve compassion 0 1 2 3 4
4. I fear that being too compassionate makes people an easy target 0 1 2 3 4
5. People will take advantage of you if you are too forgiving and compassionate 0 1 2 3 4
6. I worry that if I am compassionate, vulnerable people can be drawn to me and drain my emotional resources 0 1 2 3 4
7. People need to help themselves rather than waiting for others to help them 0 1 2 3 4
8. I fear that if I am compassionate, some people will become too dependent upon me 0 1 2 3 4
9. Being too compassionate makes people soft and easy to take advantage of 0 1 2 3 4
10. For some people, I think discipline and proper punishments are more helpful than being compassionate to them 0 1 2 3 4

Scale 2: Responding to the expression of compassion from others

1. Wanting others to be kind to oneself is a weakness 0 1 2 3 4

2. I fear that when I need people to be kind and understanding they won't be 0 1 2 3 4
3. I'm fearful of becoming dependent on the care from others because they might not always be available or willing to give it 0 1 2 3 4
4. I often wonder whether displays of warmth and kindness from others are genuine 0 1 2 3 4
5. Feelings of kindness from others are somehow frightening 0 1 2 3 4
6. When people are kind and compassionate towards me I feel anxious or embarrassed 0 1 2 3 4
7. If people are friendly and kind I worry they will find out something bad about me that will change their mind 0 1 2 3 4
8. I worry that people are only kind and compassionate if they want something from me 0 1 2 3 4
9. When people are kind and compassionate towards me I feel empty and sad 0 1 2 3 4
10. If people are kind I feel they are getting too close 0 1 2 3 4
11. Even though other people are kind to me, I have rarely felt warmth from my relationships with others 0 1 2 3 4
12. I try to keep my distance from others even if I know they are kind 0 1 2 3 4
13. If I think someone is being kind and caring towards me, I 'put up a barrier' 0 1 2 3 4

Scale 3: Expressing kindness and compassion towards yourself

1. I feel that I don't deserve to be kind and forgiving to myself 0 1 2 3 4
2. If I really think about being kind and gentle with myself it makes me sad 0 1 2 3 4
3. Getting on in life is about being tough rather than compassionate 0 1 2 3 4
4. I would rather not know what being 'kind and compassionate to myself' feels like 0 1 2 3 4
5. When I try and feel kind and warm to myself I just feel kind of empty 0 1 2 3 4
6. I fear that if I start to feel compassion and warmth for myself, I will feel overcome with a sense of loss/grief 0 1 2 3 4
7. I fear that if I become kinder and less self-critical to myself then my standards will drop 0 1 2 3 4
8. I fear that if I am more self compassionate I will become a weak person 0 1 2 3 4
9. I have never felt compassion for myself, so I would not know where to begin to develop these feelings 0 1 2 3 4
10. I worry that if I start to develop compassion for myself I will become dependent on it 0 1 2 3 4
11. I fear that if I become too compassionate to myself I will lose my self-criticism and my flaws will show 0 1 2 3 4
12. I fear that if I develop compassion for myself, I will become someone I do not want to be 0 1 2 3 4
13. I fear that if I become too compassionate to myself others will reject me 0 1 2 3 4
14. I find it easier to be critical towards myself rather than compassionate 0 1 2 3 4
15. I fear that if I am too compassionate towards myself, bad things will happen 0 1 2 3 4

SCORING

Simply sum the items for each of the 3 scales

DESCRIPTION

Compassion Evaluation Scales

We developed three scales for this study, measuring Fear of compassion for self (compassion we have for ourselves when we make mistakes or things go wrong in our lives), Fear of compassion from others (the compassion that we experience from others and flowing into the self) and Fear of compassion for others (the compassion we feel for others, related to our sensitivity to other people's thoughts and feelings). We generated a series of items based on various fears of compassion for each of these scales. Many of these items were inspired by PGs discussions with patients, ideas generated in the psychotherapy literature (e.g. Arieti & Bemporad, 1980) and in the attachment literature (Bowlby, 1969, 1973, 1980).

We generated twenty items for each domain and then asked the research team to rank the items according to face validity and selected the items which were rated to be the most valid. Those items for which there was general agreement that they had low face validity or were difficult to understand were rejected. The final subscales consisted of: Compassion for Self comprised 15 items (e.g. "I worry that if I start to develop compassion for myself I will become dependent on it"); compassion from others comprised 13 items (e.g. "I try to keep my distance from others even if I know they are kind"); compassion for Others comprised 10 items (e.g. "Being too compassionate makes people soft and easy to take advantage of"). The items were rated on a five-point Likert scale (0 = Don't agree at all, 4 = Completely agree). The Cronbach's alphas for this scale are 0.85 for fear of compassion for self; 0.87 for fear of compassion from others and 0.78 for fear of compassion for others.

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Gilbert P, McEwan K, Gibbons L, Chotai S, Duarte J, Matos M. Fears of compassion and happiness in relation to alexithymia, mindfulness, and self-criticism. Psychology and Psychotherapy: Theory, research and practice. 2012 Dec;85(4):374-90. https://doi.org/10.1111/j.2044-8341.2011.02046.x

Appendix G: The Forms of Self-Criticisms/Attacking and Self-Reassurance Scale

THE FORMS OF SELF-CRITICISING/ATTACKING &

SELF-REASSURING SCALE (FSCRS)

When things go wrong in our lives or don't work out as we hoped, and we feel we could have done better, we sometimes have *negative and self-critical thoughts and feelings*. These may take the form of feeling worthless, useless or inferior etc. However, people can also try to be supportive of themselves. Below are a series of thoughts and feelings that people sometimes have. Read each statement carefully and circle the number that best describes how much each statement is true for you.

Please use the scale below.

Not at all like me	A little bit like me	Moderately like me	Quite a bit like me	Extremely like me
0	1	2	3	4

When things go wrong for me:

1.	I am easily disappointed with myself.	0	1	2	3	4
2.	There is a part of me that puts me down.	0	1	2	3	4
3.	I am able to remind myself of positive things about myself.	0	1	2	3	4
4.	I find it difficult to control my anger and frustration at myself.	0	1	2	3	4
5.	I find it easy to forgive myself.	0	1	2	3	4
6.	There is a part of me that feels I am not good enough.	0	1	2	3	4
7.	I feel beaten down by my own self-critical thoughts.	0	1	2	3	4
8.	I still like being me.	0	1	2	3	4
9.	I have become so angry with myself that I want to hurt or injure myself.	0	1	2	3	4
10.	I have a sense of disgust with myself.	0	1	2	3	4
11.	I can still feel lovable and acceptable.	0	1	2	3	4
12.	I stop caring about myself.	0	1	2	3	4
13.	I find it easy to like myself.	0	1	2	3	4

14.	I remember and dwell on my failings.	0	1	2	3	4
15.	I call myself names.	0	1	2	3	4
16.	I am gentle and supportive with myself.	0	1	2	3	4
17.	I can't accept failures and setbacks without feeling inadequate.	0	1	2	3	4
18.	I think I deserve my self-criticism.	0	1	2	3	4
19.	I am able to care and look after myself.	0	1	2	3	4
20.	There is a part of me that wants to get rid of the bits I don't like.	0	1	2	3	4
21.	I encourage myself for the future.	0	1	2	3	4
22.	I do not like being me.	0	1	2	3	4

SCORING

1. **is**	I am easily disappointed with myself.	0	1	2	3	4
2. is	There is a part of me that puts me down.	0	1	2	3	4
3. rs	I am able to remind myself of positive things about myself.	0	1	2	3	4
4. is	I find it difficult to control my anger and frustration at myself.	0	1	2	3	4
5. rs	I find it easy to forgive myself.	0	1	2	3	4
6. is	There is a part of me that feels I am not good enough.	0	1	2	3	4
7. is	I feel beaten down by my own self-critical thoughts.	0	1	2	3	4
8. rs	I still like being me.	0	1	2	3	4
9. hs	I have become so angry with myself that I want to hurt or injure myself.	0	1	2	3	4
10.hs	I have a sense of disgust with myself.	0	1	2	3	4
11.rs	I can still feel lovable and acceptable.	0	1	2	3	4
12.hs	I stop caring about myself.	0	1	2	3	4
13.rs	I find it easy to like myself.	0	1	2	3	4
14.is	I remember and dwell on my failings.	0	1	2	3	4
15.hs	I call myself names.	0	1	2	3	4
16.rs	I am gentle and supportive with myself.	0	1	2	3	4
17.is	I can't accept failures and setbacks without feeling inadequate.	0	1	2	3	4
18.is	I think I deserve my self-criticism.	0	1	2	3	4
19.rs	I am able to care and look after myself.	0	1	2	3	4
20.is	There is a part of me that wants to get rid of the bits I don't like.	0	1	2	3	4
21.rs	I encourage myself for the future.	0	1	2	3	4
22.hs	I do not like being me.	0	1	2	3	4

KEY FOR SUBSCALES:

is = inadequate self,

rs = reassured self,

hs = hated self

DESCRIPTION

This scale was developed by Gilbert, Clarke, Hempel, Miles and Irons (2004). It was developed to measure self-criticism and the ability to self-reassure. It is a 22-item scale, which measures different ways people think and feel about themselves when things go wrong for them. The items make up three components, there are two forms of self-criticalness; inadequate self, which focuses on a sense of personal inadequacy ('I am easily disappointed with myself'), and hated self, this measures the desire to hurt or persecute the self ('I have become so angry with myself that I want to hurt or injury myself'), and one form to self-reassure, reassured self ('I am able to remind myself of positive things about myself'). The responses are given on a 5-point Likert scale (ranging from 0 = 'not at all like me', to 4 = 'extremely like me'). Cronbach alphas were .90 for inadequate self and .86 for hated self and reassured self respectively.

REFERENCE

Gilbert P, Clarke M, Hempel S, Miles JN, Irons C. Criticizing and reassuring oneself: An exploration of forms, styles and reasons in female students. British Journal of Clinical Psychology. 2004 Mar;43(1):31-50.
https://doi.org/10.1348/014466504772812959

It has been used in a number of other studies

Appendix H: The Oldenburg Burnout Inventory

Instructions: Below you find a series of statements with which you may agree or disagree. Using the scale, please indicate the degree of your agreement by selecting the number that corresponds with each statement.

		strongly agree	*agree*	*disagree*	*strongly disagree*
1.	I always find new and interest- ing aspects in my work *(D)*	*1*	*2*	*3*	*4*
2.	There are days when I feel tired before I arrive at work *(E.R.)*	*1*	*2*	*3*	*4*
3.	It happens more and more often that I talk about my work in a negative way *(D.R)*	*1*	*2*	*3*	*4*
4.	After work, I tend to need more time than in the past in order to relax and feel better *(E.R)*	*1*	*2*	*3*	*4*
5.	I can tolerate the pressure of my work very well *(E)*	*1*	*2*	*3*	*4*
6.	Lately, I tend to think less at work and do my job almost mechanically *(D.R)*	*1*	*2*	*3*	*4*
7.	I find my work to be a positive challenge *(D)*	*1*	*2*	*3*	*4*
8.	During my work, I often feel emotionally drained *(E.R.)*	*1*	*2*	*3*	*4*
9.	Over time, one can become dis- connected from this type of work *(D.R)*	*1*	*2*	*3*	*4*
10.	After working, I have enough energy for my leisure activities *(E)*	*1*	*2*	*3*	*4*
11.	Sometimes I feel sickened by my work tasks *(D.R)*	*1*	*2*	*3*	*4*
12.	After my work, I usually feel worn out and weary *(E.R)*	*1*	*2*	*3*	*4*
13.	This is the only type of work that I can imagine myself doing *(D)*	*1*	*2*	*3*	*4*
14.	Usually, I can manage the amount of my work well *(E)*	*1*	*2*	*3*	*4*
15.	I feel more and more engaged in my work *(D)*	*1*	*2*	*3*	*4*
16.	When I work, I usually feel energized *(E)*	*1*	*2*	*3*	*4*

Note: Disengagement items are 1, 3(R), 6(R), 7, 9(R), 11(R), 13, 15. Exhaustion items are 2(R), 4(R), 5, 8(R), 10, 12(R), 14, 16. (R) means reversed item when the scores should be such that higher scores indicate more burnout.

disengagement	***exhaustion***	***full scale***
sub-total:	***sub-total:***	***total:***

Delgadillo et al (2018) reported "Therapists are identified as having low, medium or high OLBI-D scores, based on scores above or below 1 standard deviation of the mean (M = 2.15, SD = 0.52; ≤1.62 = low, 1.63 to 2.67

= medium, ≥2.68 = high)."

Delgadillo, J., D. Saxon, et al. (2018). *"Associations between therapists' occupational burnout and their patients' depression and anxiety treatment outcomes."* Depression and Anxiety, In press. Background: Occupational burnout is common in mental health professionals, but its impact on patient outcomes is as yet uncertain. This study aimed to investigate associations between therapist-level burnout and patient-level treatment outcomes after psychological therapy. Methods: We applied multilevel modelling using depression (PHQ-9) and anxiety (GAD-7) outcomes data from 2223 patients nested within 49 therapists. Therapists completed a survey including the Oldenburg Burnout Inventory (OLBI) and a job satisfaction scale (JDSS).
Results: After controlling for case-mix, around 5% of variability in treatment outcomes was explained by therapist effects (TE). Higher therapist OLBI-Disengagement and JDSS scores were significantly associated with poorer treatment outcomes, explaining between 31% and 39% of the TE estimate. Higher OLBI scores were also correlated with lower job satisfaction ratings. Conclusions: Therapist burnout has a negative impact on treatment outcomes and could be the target of future preventive and remedial action.

Demerouti, E., et al. (2010). *"Burnout and work engagement: A thorough investigation of the independency of both constructs."* J Occup Health Psychol **15**(3): 209-222. This study among 528 South African employees working in the construction industry examined the dimensionality of burnout and work engagement, using the Maslach Burnout Inventory-General Survey, the Oldenburg Burnout Inventory, and the Utrecht Work Engagement Scale. On the basis of the literature, we predicted that cynicism and dedication are opposite ends of one underlying attitude dimension (called "identification"), and that exhaustion and vigor are opposite ends of one "energy" dimension. Confirmatory factor analyses showed that while the attitude constructs represent opposite ends of one continuum, the energy constructs do not—although they are highly correlated. These findings are also supported by the pattern of relationships between burnout and work engagement on the one hand, and predictors (i.e., work pressure, autonomy) and outcomes (i.e., organizational commitment, mental health) on the other hand. Implications for the measurement and conceptualization of burnout and work engagement are discussed. [This article gives updated details of the Oldenburg Burnout Inventory].

Peterson, U., et al. (2008). *"Burnout and physical and mental health among Swedish healthcare workers."*

J Adv Nurs **62**(1): 84-95. AIM: This paper is a report of a study to investigate how burnout relates to self- reported physical and mental health, sleep disturbance, memory and lifestyle factors. BACKGROUND: Previous research on the possible relationship between lifestyle factors and burnout has yielded somewhat inconsistent results. Most of the previous research on possible health implications of burnout has focused on its negative impact on mental health. Exhaustion appears to be the most obvious manifestation of burnout, which also correlates positively with workload and with other stress-related outcomes. METHOD: A cross-sectional study was conducted, using questionnaires sent to all employees in a Swedish County Council (N = 6118) in 2002. The overall response rate was 65% (n = 3719). A linear discriminant analysis was used to look for different patterns of health indicators and lifestyle factors in four burnout groups (non-burnout, disengaged, exhausted and burnout). RESULTS: Self-reported depression, anxiety, sleep disturbance, memory impairment and neck- and back pain most clearly discriminated burnout and exhausted groups from disengaged and non-burnout groups. Self-reported physical exercise and alcohol

consumption played a minor role in discriminating between burnout and non-burnout groups, while physical exercise discriminated the exhausted from the disengaged group. CONCLUSION: Employees with burnout had most symptoms, compared with those who experienced only exhaustion, disengagement from work or no burnout, and the result underlines the importance of actions taken to prevent and combat burnout. [Suggested cut-off scores in this paper were >=2.25 for exhaustion and >=2.1 for disengagement].

Demerouti, E., et al. (2001). *"The job demands-resources model of burnout."* J Appl Psychol **86**(3): 499-512. The job demands-resources (JD-R) model proposes that working conditions can be categorized into 2 broad categories, job demands and job resources. that are differentially related to specific outcomes. A series of LISREL analyses using self-reports as well as observer ratings of the working conditions provided strong evidence for the JD-R model: Job demands are primarily related to the exhaustion component of burnout, whereas (lack of) job resources are primarily related to disengagement. Highly similar patterns were observed in each of 3 occupational groups: human services, industry, and transport (total N = 374). In addition, results confirmed the 2-factor structure (exhaustion and disengagement) of a new burnout instrument - the Olden- burg Burnout Inventory - and suggested that this structure is essentially invariant across occupational groups.

Appendix I: The Clinical Outcomes in Routine Evaluation Questionnaire

IMPORTANT – PLEASE READ THIS FIRST

This form has 10 statements about how you have been OVER THE LAST WEEK. Please read each statement and think how often you felt that way last week.

Then choose the option which is closest to this.

Over the last week …

Not at all (0) Only occasionally (1) Sometimes (2) Often (3) Most or all of the time (4)

1. I have felt tense, anxious or nervous
2. I have felt I have someone to turn to for support when needed
3. I have felt able to cope when things go wrong
4. Talking to people has felt too much for me
5. I have felt panic or terror
6. I made plans to end my life
7. I have had difficulty getting to sleep or staying asleep
8. I have felt despairing or hopeless
9. I have felt unhappy
10. Unwanted images or memories have been distressing me

Appendix J – The Post-Traumatic Stress Disorder Checklist

PCL-5

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right 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
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. 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 one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "superalert" or watchful or on guard?	0	1	2	3	4

18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

Version date: 11 April 2018

Reference: Weathers F, Litz B, Keane T, Palmieri P, Marx B, Schnurr P. The PTSD Checklist for DSM-5 (PCL-5)–Standard [Measurement instrument]. National Center For PTSD.

Available from https://www.ptsd.va.gov/

URL: https://www.ptsd.va.gov/professional/ assessment/adult-sr/ptsd-checklist.asp

Appendix K: The Alcohol Use Disorders Identification Test (AUDIT)

Alcohol use disorders identification test (AUDIT)

AUDIT is a comprehensive 10 question alcohol harm screening tool. It was developed by the World Health Organisation (WHO) and modified for use in the UK and has been used in a variety of health and social care settings.

Questions	Scoring system					Your score
	0	1	2	3	4	
How often do you have a drink containing alcohol?	Never	Monthly or less	2 to 4 times per month	2 to 3 times per week	4 times or more per week	
How many units of alcohol do you drink on a typical day when you are drinking?	0 to 2	3 to 4	5 to 6	7 to 9	10 or more	
How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you failed to do what was normally expected from you because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you needed an alcoholic drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
Have you or somebody else been injured as a result of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested that you cut down?	No		Yes, but not in the last year		Yes, during the last year	

Appendix L: The External and Internal Shame Scale

EISS

(C. Ferreira, M. Moura-Ramos, M. Matos & A. Galhardo, 2020)

Below are a series of statements about feelings people may usually have, but that might be experienced by each person in a different way. Please read each statement carefully and circle the number that best indicates how often you feel what is described in each item.

Please use the following rating scale

0 = Never	1 = Rarely	2 = Sometimes	3 = Often	4 = Always

	In relation to several aspects of my life, I FEEL THAT:	0	1	2	3	4
1	other people see me as not being up to their standards	0	1	2	3	4
2	I am isolated	0	1	2	3	4
3	other people don't understand me	0	1	2	3	4
4	I am different and inferior to others	0	1	2	3	4
5	other people are judgmental and critical of me	0	1	2	3	4
6	other people see me as uninteresting	0	1	2	3	4
7	I am unworthy as a person	0	1	2	3	4
8	I am judgmental and critical of myself	0	1	2	3	4

Appendix M: ERGO Ethical Approval

ERGO Approval

Approved by Faculty Ethics Committee - ERGO II 79639

University of Southampton

ERGO II – Ethics and Research Governance Online https://www.ergo2.soton.ac.uk

Submission ID: 79639
Submission Title: Exploring the Relationship between Moral Injury, the Components of Compassion and Burnout in UK Police Officers and Firefighters
Submitter Name: David Singleton

Your submission has now been approved by the Faculty Ethics Committee. You can begin your research unless you are still awaiting any other reviews or conditions of your approval.

Comments:

•

Click here to view the submission

TId: 23011_Email_to_submitter___Approval_from_Faculty_Ethics_committee__cat_B___C_ Id: 689768

D.Singleton@soton.ac.uk coordinator

Appendix N: Study Advertisement

University of Southampton

MENTAL HEALTH RESEARCH WITH U.K. POLICE OFFICERS & FIREFIGHTERS

RESEARCH PARTICIPANTS NEEDED!

What is it about?

We know that police officers and fire fighters have extremely stressful work. We know it has an impact on mental health.

Moral injury, burnout and low levels of compassion are common experiences in the police and fire services, yet little is known about the relationship between these elements.

What does it involve?

It involves completing an online survey. It is estimated to take 30-40 minutes to complete.

As a thank you, there is an opt in draw of **19 Amazon vouchers** that you can enter after completing the survey!

Scan the QR code, type or copy & paste the link

https://southampton.qualtrics.com/jfe/form/SV_24vURVDGLCch0JU

ERGO: 79659 22/06/2023 Version 2

Why get involved?

By doing this research we hope that we understand more about these experiences. The more we understand, we hope that the more effective and helpful support can be accessible and provided for police officers and fire fighters.

We will also provide you with several resources that we hope you find helpful for taking part in this research.

Appendix O: Participant Information Sheet and Consent Form

Participant Information Sheet

Study Title: Exploring the Relationship between Moral Injury, the Components of Compassion and Burnout in UK Police Officers and Firefighters

Researcher: David Singleton (Trainee Clinical Psychologist)
ERGO number: 79639

You are being invited to take part in the above research study. To help you decide whether you would like to take part or not, it is important that you understand why the research is being done and what it will involve. Please read the information below carefully and ask questions if anything is not clear or you would like more information before you decide to take part in this research. You may like to discuss it with others but it is up to you to decide whether or not to take part. If you are happy to participate you will be asked to tick the consent box at the end of this form.

What is the research about?

The researcher is a Trainee Clinical Psychologist who is completing their doctoral thesis at the University of Southampton. The researcher has a passionate interest in moral injury and compassion, having completed previous research with healthcare professionals. The researcher recognises that there is a gap in research and therefore a lack of understanding of how police officers and firefighters may also experience moral injury.

The researcher would like to understand the relationship between moral injury, the components of compassion and burnout in UK police officers and firefighters. It is important to build a greater understanding of these relationships so that an evidence base develops that can later inform supportive interventions that can help protect against any negative impacts of experiencing moral injury. Additionally it can then subsequently support and protect the physical, emotional and psychological wellbeing of UK police officers and firefighters.

The study is funded by the University of Southampton.

Why have I been asked to participate?

You have been approached as potential participants for this study as the target population for this research is actively serving police officers and firefighters in the United Kingdom. The research aims to involve approximately 200 people; 100 police officers and 100 firefighters.

What will happen to me if I take part?

If you decide that you would like to take part in the research, you will be directed to an online survey after ticking the consent box at the end of this form. This survey consists of 9 questionnaires, and it has estimated that it should take no longer than 40 minutes to complete. Please allow yourself enough time to complete the survey, we do not want you feeling rushed. You will be required to answer each question, and you will not be able to skip or go back to questions.

At the end of the survey you will be asked whether you would like to opt in for a prize draw, where the researcher is distributing 19 Amazon vouchers ranging between £25 and £100 randomly. You will be asked to tick either yes or no. If you opt in by selecting yes, then you will be redirected to a separate survey where you will be asked to provide an email address to enter the prize draw. The debrief statement will also be reshown (including all links to the resources and support services) after you provide your email address. This information is kept separate to the main survey preserving your anonymity in the study. Once the prize draw has been made and vouchers distributed, your email address will be deleted.

You will be provided with a link to a range of self-help compassionate mind resources after completing the survey. You will be directed to these resources, along with the details of several support services that you can contact, once you have completed the survey.

Are there any benefits in my taking part?

The hope is that this research will improve our current understanding of how moral injury, compassion and burnout impacts police officers and firefighters. This may lead to further research into developing and implementing supportive interventions to protect the wellbeing of our emergency services personnel.

Taking part in this research will also involve receiving access to a variety of self-help resources focused around compassion. Additionally, there is an opt in prize draw, with 19 Amazon vouchers ranging between £25-£100 to be randomly distributed to any participant that completes the whole study and opts in for this draw. This is thank participants for their time and energy in engaging in this research.

Are there any risks involved?

There are no direct risks in taking part in this study. However, you may find that some of the questions explore sensitive and personal issues where you may feel some psychological discomfort or distress. We will ensure to provide you with the contact details of several support services who you can reach out to if you do feel any psychological discomfort or distress.

What data will be collected?

You will be asked to provide an email address so that you can access the online survey (the researcher will not be given this information). At the end of the survey you will be asked to provide an email address if you wish to opt into the prize draw. The researcher will get access to this email address, but will delete this immediately after the prize draw has been made, and the vouchers distributed.

As part of the survey you will be asked to provide some demographic information including gender, age, ethnicity, marital status, religion, whether you are actively working as a UK Police Officer or Firefighter, role/rank, length of service and UK force you work in. You will not be asked to provide any other personal information. The information that you do provide will remain anonymous and completely confidential, and if you opt in for the prize draw, your email address will be kept in a separate password protected file from the information you provide in the survey. This maximises anonymity and reduces the risk of identification. It will be stored on a password protected file on a database used by the University. Only the researcher and their 2 supervisors will have access to the file.

Will my participation be confidential?

Your participation and the information we collect about you during the course of the research will be kept strictly confidential.

Only members of the research team and responsible members of the University of Southampton may be given access to data about you for monitoring purposes and/or to carry out an audit of the study to ensure that the research is complying with applicable regulations. Individuals from regulatory authorities (people who check that we are carrying out the study correctly) may require access to your data. All of these people have a duty to keep your information, as a research participant, strictly confidential.

You will provide consent by ticking the consent box at the end of this form. The information you provide in the survey is transferred securely to a database programme approved by the University. Once the data has been transferred onto this database, it will be under a password protected file, that only the researcher and their 2 supervisors will have access to.

Do I have to take part?
No, it is entirely up to you to decide whether or not to take part. If you decide you want to take part, you will need to provide consent by ticking the consent box at the end of this form to show you have agreed to take part.

What happens if I change my mind?
You have the right to change your mind and withdraw at any time without giving a reason and without your participant rights being affected. You can withdraw at anytime during the survey up until you have completed it. Withdrawal after completing the survey will not be possible as the data will not be identifiable to you. Although you provide an email address for the opt in prize draw, this is kept separate from the other information in the survey you provide, so it will not be possible to remove your participation once completed.

What will happen to the results of the research?
Your personal details will remain strictly confidential. Research findings made available in any reports or publications will not include information that can directly identify you.

As part of the researcher's Doctorate in Clinical Psychology training, the research will be written up in a report, and presented at a conference including to a panel of examiners. The researcher also aims to publish this research in a relevant academic journal.

Where can I get more information?
If you would like to contact the research team with any questions about this research or about your potential participation, please contact:

David Singleton (Trainee Clinical Psychologist) – D.Singleton@soton.ac.uk Dr David Beattie (Clinical Psychologist) – D.Beattie@soton.ac.uk

What happens if there is a problem?
If you have a concern about any aspect of this study, you should speak to the researchers who will do their best to answer your questions.
If you remain unhappy or have a complaint about any aspect of this study, please contact the University of Southampton Research Integrity and Governance Manager (023 8059 5058, rgoinfo@soton.ac.uk).

Data Protection Privacy Notice
The University of Southampton conducts research to the highest standards of research integrity. As a publicly-funded organisation, the University has to ensure that it is in the

public interest when we use personally-identifiable information about people who have agreed to take part in research. This means that when you agree to take part in a research study, we will use information about you in the ways needed, and for the purposes specified, to conduct and complete the research project.
Under data protection law, 'Personal data' means any information that relates to and is capable of identifying a living individual. The University's data protection policy governing the use of personal data by the University can be found on its website (https://www.southampton.ac.uk/legalservices/what-we-do/data-protection-and-foi.page).

This Participant Information Sheet tells you what data will be collected for this project and whether this includes any personal data. Please ask the research team if you have any questions or are unclear what data is being collected about you.

Our privacy notice for research participants provides more information on how the University of Southampton collects and uses your personal data when you take part in one of our research projects and can be found at http://www.southampton.ac.uk/assets/sharepoint/intranet/ls/Public/Research%20and%20Integrity% 20Privacy%20Notice/Privacy%20Notice%20for%20Research%20Participants.pdf

Any personal data we collect in this study will be used only for the purposes of carrying out our research and will be handled according to the University's policies in line with data protection law. If any personal data is used from which you can be identified directly, it will not be disclosed to anyone else without your consent unless the University of Southampton is required by law to disclose it.

Data protection law requires us to have a valid legal reason ('lawful basis') to process and use your Personal data. The lawful basis for processing personal information in this research study is for the performance of a task carried out in the public interest. Personal data collected for research will not be used for any other purpose.

For the purposes of data protection law, the University of Southampton is the 'Data Controller' for this study, which means that we are responsible for looking after your information and using it properly. The University of Southampton will keep identifiable information about you for 7 years after the study has finished after which time any link between you and your information will be removed.

To safeguard your rights, we will use the minimum personal data necessary to achieve our research study objectives. Your data protection rights – such as to access, change, or transfer such information - may be limited, however, in order for the research output to be reliable and accurate. The University will not do anything with your personal data that you would not reasonably expect.

If you have any questions about how your personal data is used, or wish to exercise any of your rights, please consult the University's data protection webpage (https://www.southampton.ac.uk/legalservices/what-we-do/data-protection-and-foi.page) where you can make a request using our online form. If you need further assistance, please contact the University's Data Protection Officer (data.protection@soton.ac.uk).

Thank you.

The researcher would like to thank you for taking the time to read this information sheet and considering whether you would like to take part in this research project.

Consent

Please check the following box to indicate that you consent to participating in the study

☐ I have read and understood the information sheet, I agree to take part in this research project and agree for my data to be used for the purpose of this study, and I understand that my participation is voluntary and I may withdraw at any time (up until completing the survey) for any reason without my participation rights being affected.

Appendix P: Debrief Sheet

Debriefing Form

Study Title: Exploring the Relationship between Moral Injury, the Components of Compassion and Burnout in UK Police Officers and Firefight
Ethics/ERGO number: 79639
Researcher(s): David Singleton (Trainee Clinical Psychologist), Dr David Beattie (Clinical Psychologist), Dr Margo Ononaiye (Clinical Psychologist and Principal Teaching Fellow) **University email(s):** D.Singleton@soton.ac.uk & D.Beattie@soton.ac.uk & m.s.ononaiye@soton.ac.uk
Version and date: Version 4 [07/07/2023]

Thank you for taking part in our research project. Your contribution is very valuable and greatly appreciated.

Purpose of the study

The aim of this research is to explore the relationships between moral injury, burnout and compassion in UK frontline police officers and firefighters. The researcher predicts that moral injury will be associated with negative impacts on mental health and burnout, but having greater compassion for oneself could protect against the severity of the negative impacts moral injury has on mental health and burnout.

The data from your participation in this research will help our understanding of the relationship between moral injury, burnout and compassion. It is important for us to gain a greater understanding of this as only by being able to identify these impacts will we then be in a position to research and implement supportive strategies that can protect the wellbeing of our frontline police officers and firefighters from the impacts of moral injury.

Confidentiality

Results of this study will not include your name or any other identifying characteristics. If you opted in for the prize draw vouchers, your email addresses are kept separate from the data in the survey and will be deleted once the prize draw has been made and vouchers distributed.

Resources

There are several resources we will provide that we hope you find helpful. Please take note of how to access these resources as once you have clicked off the survey you will not have this information. We will however, distribute these resources to “The Fire Fighters Charity” after recruitment has ended so that you will be able to access the resources

through them.

- https://www.compassionatemind.co.uk/resource/videos
- https://www.compassionatemind.co.uk/resource/audio

Study results

If you would like to receive a copy of the final report/the summary of the research findings, please contact the researcher, whose details can be found below in the "Further Information" section.

Further Support

If taking part in this study has caused you discomfort or distress, you can contact the following organisations for support:

- Your local police or fire service Occupational Health department
- The Fire Fighters Charity
- The Police Federation
- Your registered GP
- The Samaritans
  - Telephone: 116 123
- Blue Light Together
  - Website: https://bluelighttogether.org.uk/
- Mind
  - Website: https://www.mind.org.uk/news-campaigns/campaigns/blue-light-programme/

You will also receive a link to a number of self-help compassionate mind resources that we hope you will find useful.

Further Reading

If you would like to learn more about this area of research, you can refer to the following resources:

Forkus, S. R., Breines, J. G., & Weiss, N. H. (2019). Morally injurious experiences and mental health: The moderating role of self-compassion. *Psychological trauma: theory, research, practice, and policy*, *11*(6), 630.

- https://psycnet.apa.org/manuscript/2019-12977-001.pdf

Lentz, L. M., Smith-MacDonald, L., Malloy, D., Carleton, R. N., & Brémault-Phillips, S. (2021). Compromised conscience: a scoping review of moral injury among firefighters, paramedics, and police officers. *Frontiers in psychology*, *12*, 639781.

- https://www.frontiersin.org/articles/10.3389/fpsyg.2021.639781/full

Further Information

If you have any concerns or questions about this study, please contact David Singleton at D.Singleton@soton.ac.uk who will do their best to help.

If you remain unhappy or would like to make a formal complaint, please contact the Head of Research Integrity and Governance, University of Southampton, by emailing: rgoinfo@soton.ac.uk, or calling:
+ 44 2380 595058. Please quote the Ethics/ERGO number which can be found at the top of this form. Please note that if you participated in an anonymous survey, by making a complaint, you might be no longer anonymous.

Thank you again for your participation in this research.

Prize Draw

Would you like to opt in for the prize draw where there is a chance to win one of 19 Amazon vouchers ranging between £25 and £100?

☐ Yes
☐ No