Burnout and Social Connectedness: Predictors of PTSD and Well-Being in the Police

Nina Melunsky

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School of Health and Human Sciences

University of Essex

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Table of Contents

Acknowledgements	2
Table of Contents	3
List of Tables	6
List of Figures	7
Abstract	8
CHAPTER 1	-
Introduction	-
Overview	10
Stress in the police	11
Distress in the police	13
Post-traumatic stress reactions	16
Occupational burnout	26
Relationship between burnout and PTSD	31
Social connectedness	42
Relationship between social connectedness and PTSD	45
Current research	47
CHAPTER 2	-
Methodology	-
Epistemological position	50
Study design	54
Participants	54
Measures	56
Procedure	61

Data analysis 62

Ethical considerations 64

Dissemination 66

CHAPTER 3 -

Results -

Summary 67

Data cleaning 67

Tests of normality 68

Sample demographics 70

Data distributions 72

Internal reliability of scales 74

Correlations 75

Multiple regressions 77

Summary of findings 89

CHAPTER 4 -

Discussion -

Summary of project 91

Summary of findings in relation to hypotheses 92

Critique of the study 103

Implications of findings 108

Personal reflection on the research process 119

Summary 121

References 123

Appendices -

Appendix A: Oldenberg Burnout Inventory (OLBI) 151

Appendix B: Life Events Checklist (LEC-5) 153

Appendix C: Post-Traumatic Stress Disorder Checklist (PCL-5) 156

Appendix D: Depression, Anxiety and Stress Scale (DASS-21) 159

Appendix E: Social Connectedness Scale-Revised (SCS-R) 159

Appendix F: Demographic Questionnaire 160

Appendix G: Sickness Absence Questionnaire 161

Appendix H: Research and Ethics Committee Approval (Original Study) 162

Appendix I: Recruitment Email to Participants 163

Appendix J: Information Page 164

Appendix K: Consent Page 166

Appendix L: Debriefing Page 167

Appendix M: Research and Ethics Committee Approval (Current Study) 169

Appendix N: Email to Participants 169

Appendix O: Reminder Email to Participants 170

Appendix P: Correlation Table for Demographic and Outcome Variables 171

List of Tables

Table 1: Database Search Terms and Limiters 32

Table 2: Inclusion and Exclusion Criteria for Systematic Literature Search 33

Table 3: Summary of Selected Papers 34

Table 4: Sample Demographics 70

Table 5: Participant Trauma Experience Reported in Life Events Checklist 72

Table 6: Data Distributions for Predictor and Outcome Variables 73

Table 7: Internal Reliability of Predictor and Outcome Variables 74

Table 8: Correlations between Predictor and Outcome Variables 76

Table 9: Linear Model of Predictors of PTSD Symptom Severity 78

Table 10: Linear Model of Predictors of Intrusion Symptoms 80

Table 11: Linear Model of Predictors of Avoidance Symptoms 81

Table 12: Linear Model of Predictors of Negative Alterations in Cognitions and Mood 83

Table 13: Linear Model of Predictors of Alterations in Reactivity and Arousal 84

Table 14: Linear Model of Predictors of DASS Total Severity Score 86

Table 15: Linear Model of Predictors of Sickness Absence 88

Table 16: Summary of Standardised β scores for Models 1 to 5 89

Table 17: Summary of Standardised β scores for Models 6 and 7 90

List of Figures

Figure 1: The Job Demands-Resources Model of Burnout 29

Abstract

In their day-to-day tasks, police officers are repeatedly subjected to stressful and traumatic events and as such are at significant risk of developing post-traumatic stress disorder (PTSD). There is a wealth of literature exploring risk and protective factors, however there is still a need to develop our understanding of specific factors which may be unique to the police. In light of this need, two potential factors have been identified for this current research, burnout and social connectedness. Burnout relates to a culmination of stress which is unmanaged and untreated. Social connectedness relates to the internal experience of feeling connected to others and the world around.

This thesis is primarily concerned with exploring the relationship between these factors and PTSD and general distress within the context of the police force. This research took place within one UK police force. In total, 93 participants from specialist departments at high risk of exposure to trauma took part in an online survey. The survey included self-report measures of burnout, social connectedness, Post-Traumatic Stress Disorder (PTSD) and general distress. Non-standardised measures also sought to capture demographic information and an additional outcome variable of sickness absence.

A series of multiple forced-entry regressions were carried out. Increased symptoms of exhaustion (one aspect of burnout), significantly predicted increased PTSD symptom severity. Further exploratory analyses found that exhaustion significantly predicted two of the four PTSD symptom clusters: intrusion and alterations in arousal and reactivity. The same multiple regression analysis indicated that social connectedness made a significant contribution to the model predicting PTSD symptom severity, greater than that

of exhaustion. It was also found that increased symptoms of exhaustion significantly predicted increased general distress, whereas disengagement (a further aspect of burnout) and social connectedness did not. Lastly, it was found that none of the predictor variables made a significant contribution to the model predicting sickness absence. These findings are discussed in terms of their theoretical and clinical implications.

CHAPTER 1

Introduction

Overview

In their day-to-day tasks, police officers are repeatedly subjected to stressful and traumatic events and as such are at significant risk of developing post-traumatic stress disorder (PTSD). There is a wealth of literature exploring risk and protective factors, however there is still a need to develop our understanding of specific factors which may be unique to the police. In light of this need, two potential factors have been identified for this current research, burnout and social connectedness. This thesis is primarily concerned with exploring the relationship between these factors and PTSD within the context of the police force.

In order to put these factors into context, this chapter will first explore the literature relating to the occurrence, and consequences of, stress in the police, before turning its attention towards broader psychological and occupational functioning including anxiety and depression and sickness absence. The chapter then outlines the current research into PTSD within police literature. At this point it is important to clarify that the term PTSD is often referred to in police populations to encompass a wider set of psychological sequelae. As such, the term is used throughout this thesis to represent a broader conceptualisation of PTSD symptomatology, in contrast to its clinical and diagnostic applications.

Both burnout and social connectedness are then examined in more detail, exploring the literature around their definitions and theoretical underpinnings, applicability to police

officers, and then more specifically their link to PTSD. Given the shortage of research exploring their relationship to PTSD within police samples, literature from other populations is examined at this point. This leads to the conclusion that both burnout and social connectedness have the potential to play a significant role in the development of PTSD in the police, thus forming the justification for the current study.

Stress in the Police

Whilst some research may argue that policing is not all stressful (Bar-On, Brown, Kirkcaldy, & Thomé, 2000) there is over-whelming evidence to support the view that the stress experienced by police officers has a great impact on psychological and physical well-being. This was highlighted by a study of 26 high-stress professions which found that police ranked ninth in terms of compromised physical health, and eleventh in terms of compromised psychological health (Johnson et al., 2005). In part, this may be because police officers are directly (e.g. violent confrontation) and indirectly (e.g. viewing disturbing images) exposed to situations that most other occupations can avoid (Stephens & Long, 2000). Research into police stress has traditionally focused on the risks associated with operational stressors (e.g. critical incidents; Burke & Paton, 2006). The widely held belief was that low-frequency, high-impact stressors such as having to deal with death and disaster, and victims of crime (e.g. abused or injured children; Martin, McKean, & Veltkamp, 1986; Violanti & Aron, 1994), were more stressful than relatively high-frequency incidents associated with low levels of stress (Brown, Fielding, & Grover, 1999).

Conversely, more recent authors have proposed that in addition to these unique operational demands, police officers are also subjected to the general organisational characteristics and working conditions inherent in their work environment. Organisational aspects associated with the highest levels of stress have included: lack of consultation and communication, lack of control over workload, inadequate support and supervision, lack of recognition, pay and resources, role conflict and ambiguity and general excessive workload (Abdollahi, 2002; Huddleston, Stephens, & Paton, 2007). Furthermore, dealing with some of the organisational consequences of operational experiences has also been described as a constant source of stress by officers (Abdollahi, 2002), for example, working with the court system when suspects may be released on technicalities or from plea bargains, thus undermining an officer's hard work (Ayres, Flanagan, & Ayres, 1990). Some situations can also lead to the public scrutiny of the police forces. Not only has this been identified as stressful but can impact on the morale of the organisation as a whole (Violanti & Aron, 1994).

Given the multitude of organisational stressors faced by officers, it is not surprising that some research has found that organisational factors not operational incidents, are most strongly associated with perceived police stress (Collins & Gibbs, 2003; Gershon, Barocas, Canton, Li, & Vlahov, 2009). A possible explanation is that while police officers expect, and are trained to engage in potentially volatile situations, what may be less expected are organisational stressors associated with day-to-day activities (Abdollahi, 2002). Furthermore, operational and organisational tasks may at times sit in conflict with each other (Ayres & Flanagan, 1994). Officers are frequently forced to play a double role, that of a law enforcer and a social worker, maintaining order whilst empathising with victims of crime (Abdollahi, 2002).

Distress in the Police

Due to the repeated exposure to stressful situations (operational and organisational), it has been suggested that police officers are at high risk of developing mental health problems. Berg, Hem, Lau and Ekeberg (2006) found that in a sample of 3,272 police officers, 8.2% showed symptoms of depression rated as 'severe' and 11.2% had anxiety symptoms rated as 'severe'. Similar results of severe depression (8.6%) have been replicated in other samples (Andrew et al., 2008). Conversely, a study by van der Velden et al., (2013) showed that officers had a similar prevalence of symptoms of anxiety and depression as employees not considered to be in high-risk professions, such as banks, supermarket employees, mental health professionals and soldiers (pre-deployment). The authors argue that this may be due to the protective effects of self-selection, the resilience of police officers and a rigorous selection process of recruits (van der Velden et al., 2013).

Research into psychological functioning of police officers has generally utilised self-report measures of anxiety and depression. Due to potential limitations of such measurements (e.g. stigma attached to disclosure), wider psychological sequelae such as sickness absence rates could also be an important and convenient index of workers' morbidity or general wellbeing (Alexopoulos, Konstantinou, Bakoyannis, Tanagra, & Burdorf, 2008). It is reported that in the UK police sickness costs the tax payer £90 million per annum (Montgomery, 2008), and is therefore an important area of research from both a financial and psychological perspective. However, sickness absence is a complex phenomenon that is influenced by social, organisational, and personal factors (Dekkers-Sánchez, Hoving, Sluiter, & Frings-Dresen, 2008). Such factors are proposed

to cause wide variations in sickness rates between forces (e.g. the sickness absence rate in the Suffolk force is 111% higher than Cheshire; The Home Affairs Select Committee, 2011).

Despite a well-established literature around sickness absence in the general population, research in police samples is in its infancy. However there is some evidence to suggest higher rates of sickness absence compared to other occupational groups. A UK study showed that sickness absence rates in police officers are higher than in Royal Air Force officers, at 3.6% versus 0.7% respectively (Guest, 1982). A systematic review found only a handful studies on sickness absence among police personnel. Due to the lack of consistency in the measurement of absence (e.g. number of sick-leave hours, number of sick-leave days, frequency of sick-leave) the authors were unable to draw any firm conclusions (Körlin, Alexanderson, & Svedberg, 2009). However, there was some evidence to suggest high rates of absenteeism in the police force, especially among female police officers (Körlin et al., 2009). This supports earlier findings within a Norwegian study which found that 9.7% of male and 10.3% of female officers reported taking stress-related sick-leave during a one year period (Berg et al., 2006). These results may contribute to the proposal that sick leave rates are higher in gender-segregated occupations and that sick leave rates are highest in male dominated occupations, for both women and men (Leijon, Hensing, & Alexanderson, 2004).

In a sample of UK police officers, 25% of sickness absences was attributed specifically to stress (Brown & Campbell, 1994). Other common causes for sick leave in the police include: musculoskeletal pain, gastrointestinal complaints, and migraine, which cannot be explained by physiological changes (Körlin et al., 2009). However, in attempting to identify factors which contribute to sickness absence, research has been criticised for the

use of reductionist measurements which assign absence to categories such as 'PTSD' or 'work stress', thus presuming a single cause (Summerfield, 2011). Summerfield (2011) reported that his clinical experience indicated that most assessments of officers' occupational functioning involved a range of stressors including, conflict with other staff, being subjected to management investigation, unresolved grievance procedures, marital discord and financial worries.

Additionally, recording of sickness absence most often relies on self-report data, however this may also be influenced by a number of factors. Berg et al. (2006) found police workers reported higher scores on subjective health complaints than physicians, but lower scores of burnout. The authors suggest that this may indicate that work stressors are not translated into self-reports of burnout, but are rather deflected in physical complaints. It may also suggest that high level of commitment leads the employee to ignore symptoms of stress, and come to work when others would have stayed at home to recover, reflecting the notion of 'sickness presenteeism' (Leineweber et al., 2011). One explanation for this may be an officers' hardiness, more specifically, an individuals' belief that they are capable of coping with challenges. It is possible that high levels of hardiness may lead to an individual ignoring symptoms of work strain, which could lead to subjective health complaints (Tang & Hammontree, 1992). Taken together, these findings could mean that research into sickness absence on its own may underestimate the impact of external and internal factors on a police officer's level of functioning. As a result, rates of sickness absence should sit alongside measures of psychological well-being to provide a broader understanding of an individual's experience.

Post-Traumatic Stress Reactions

Given the day-to-day stressors experienced by officers, and the wealth of research to suggest the negative impact on psychological and physical well-being, it is not surprising that there is a growing body of research which suggests that police personnel are at greater risk of developing post-traumatic stress symptoms resulting from work-related incidents especially in light of the terrorist attacks of September 11th, 2001 (Maguen et al., 2009). The definition and diagnostic categorisation of PTSD will be outlined initially to provide a framework for understanding the current research into prevalence, risk and protective factors in police populations. The diagnostic categorisation is included to support the understanding of the types of symptoms and recent discussions as to what constitutes 'trauma'. However, the current study aims not to diagnose officers, but rather understand PTSD as a spectrum of symptoms, and thus its use within this study relates to PTSD in a much broader sense.

Definition. In its initial formulation within the third edition of the Diagnostic and Statistical Manual of Mental Disorders, (DSM-III; APA, 1980), a traumatic event was conceptualised as 'a catastrophic stressor that was outside the range of usual human experience'. However, the majority of research into police stress occurred during the existence of the DSM-IV (APA, 1994) which defined a traumatic event as one that 'involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others' (APA, 1994). In addition to experiencing or witnessing a traumatic event by this definition (i.e. Criterion A), a diagnosis of PTSD also included symptoms from each of three symptom clusters: intrusive recollections (Criterion B), avoidant/numbing symptoms (Criterion C), and hyper-arousal symptoms (Criterion D).

Recently, the DSM-5 (APA, 2013) expanded the symptom criteria to capture a more comprehensive profile of the post-traumatic stress response, including symptoms that may be shared with other disorders. To mitigate against the potential for higher rates of co-morbidity resulting from shared symptomology, the number of key symptom clusters in DSM-5 were increased from three to four, and now include intrusive recollections (Criterion B), avoidant/numbing symptoms (Criterion B), negative cognitions and mood (Criterion D), and alterations in arousal or reactivity symptoms (Criterion E). The DSM-5 (APA, 2013) took the additional step of expanding the stressor criterion (i.e. Criterion A) to now include, 'repeated or extreme indirect exposure to aversive details of the event(s), usually in the course of professional duties', for example professionals repeatedly exposed to details of child abuse. The impact of changes to the classification of PTSD within the DSM-5 on research outcomes is still developing, however in many ways diagnostic criteria for PTSD within the DSM-5 are similar to DSM-IV. A recent study found that DSM-IV symptoms can be used to approximate DSM-5 diagnoses of PTSD among recently deployed soldiers, inferring that it may be possible to recode symptom-level data from earlier DSM-IV studies to draw inferences about DSM-5 PTSD symptomatology (Rosellini et al., 2015).

There is also the potential for research to integrate the literature around Secondary Traumatic Stress (STS; Figley, 1995) with that of PTSD. STS refers to PTSD symptoms developed as a result of empathetic exposure to the traumatic experiences of others (Collins & Long, 2003). Whilst STS was traditionally viewed as distinct from PTSD as the trauma was experienced indirectly, it was also acknowledged that the spectrum of symptoms was the same as PTSD (Figley, 1999). However, in line with the new Criterion A in DSM-5, it could be argued that STS be included into this broader

conceptualisation of PTSD, although only for individuals where the trauma occurs in the context of one's professional responsibilities. In order to understand the relationship between PTSD and STS, it would be beneficial to recode symptom level data from studies which have used measures of STS into the new PTSD diagnostic criteria, however in the absence of this research, and for the purposes of this discussion, research into both STS and PTSD will be summarised.

Prevalence. The incidence of PTSD in police officers has been found to vary between 7% and 19%, in comparison to the general population which is estimated at between 7% and 9% (Carlier, Lamberts, & Gersons, 1997; Gersons, 1989; Maia et al., 2007; Robinson, Sigman, & Wilson, 1997). Among 262 Dutch police officers interviewed at 2 weeks, 3 months, and 12 months after experiencing a critical incident, 7% met full diagnostic criteria for current PTSD on at least one of the time points (Carlier et al., 1997). Greater rates have also been found for those with sub-dromal PTSD. In the same sample of Dutch police officers, 34% suffered from post-traumatic stress symptoms or sub-dromal PTSD at some point during the study (Carlier et al., 1997). Among 157 Brazilian police officers, whilst only 9% met full criteria for PTSD, an additional 16% met criteria for sub-dromal PTSD (Maia et al., 2007). Similarly, in a sample of Norwegian police officers, 30.5% reported moderate to severe levels of PTSD symptoms (re-experiencing and avoidance reactions; Berg et al., 2006). Despite the compelling findings, these prevalence figures suggest that a large majority of police officers exposed to a traumatic event do not develop symptoms of PTSD, suggesting that other factors may contribute to determining an officer's response to a situation, including operational and organisational, individual and internal factors. Whilst there is overlap between these categories they have been somewhat arbitrarily separated for clarity.

Operational and Organisational Factors. Operational factors which have been implicated in the development of PTSD in police officers include the type of trauma and the numbers of trauma experienced. Firstly, evidence suggests that some types of trauma play a greater role in the development of post-traumatic stress responses than others. Often, a distinction is made between incidents which involve 'active' participation, meaning that officers have been directly involved (situations which often entail a perceived threat to life), and 'passive' participation when an officer in not directly involved. Officers involved in 'active' shooting incidents reported more symptoms of PTSD than those who had not been involved in such incidents (Martin et al., 1986). Blanchard et al. (1995) reported that incidents involving perceived threat to life alongside severity of injury together accounted for 12% of the variance in PTSD symptom severity. Conversely, other authors have found that 'passive' participation in incidents including dealing with death and abuse were the best predictor of total PTSD symptoms and symptoms of both avoidance and hyper-arousal in officers (Robinson et al., 1997). Indirect, repeated or extreme exposure to events is a common occurrence for many police personnel. For example, Perez, Jones, Englert and Sachau (2010) found that in a sample of detectives investigating internet child pornography cases, greater exposure to disturbing media was related to higher levels of STS.

Replicating research findings into police stress, it is not only operational incidents which have been implicated in the development of PTSD in officers, but also organisational factors. A cross-sectional study by Liberman et al. (2002) found that, in the development of PTSD symptomatology, the effects of organisational stressors were independent of, and larger than, the effects of cumulative critical incident exposure. The limitations of extrapolating such cross-sectional research was addressed by Huddleston et al. (2007)

whose longitudinal study in a sample of police recruits found that, after one year, organisational stressors were consistently stronger predictors of PTSD symptoms than traumatic events (Huddleston et al., 2007). The authors concluded that such findings may suggest a potential interaction effect, where organisational stressors work to exacerbate the effects of critical incidents, although independent effects were found by Liberman et al. (2002).

Police officers are vulnerable to experiencing multiple traumas over the course of their career. Marmar et al. (2006) suggested that previous trauma exposure may be an important moderating factor in determining how an individual will cope with future trauma. Unlike many other individuals, police are often unable to avoid future potentially traumatic situations. Papazoglou's (2013) concept of Police Complex Spiral Trauma (PCST) asserts that if no help is sought, the accumulation of further trauma (either occupational or personal) exacerbates the distress experienced in untreated police officers. Officers who may initially appear to be functioning adequately shortly after a stressful or traumatic event, can show symptoms of stress months, or even years later (Colwell, Bruce, Garner, & Miller, 2011) potentially due to the accumulation of subsequent trauma on an already overloaded system (Anshel, 2000).

The conservation of resources theory (COR; Hobfoll, 1989, 2001) may further explain Papazoglou's (2013) model of PCST. Hobfoll (1989) suggested that it is how personal, social, economic, and environmental resources fit with external demands which determines the individual stress response. One of COR theory's central assumptions is that resources are utilised to deal with threatening conditions in an attempt to prevent negative outcomes (Hobfoll, 1989). The second assumption is that individuals strive to

protect and accumulate these resources (i.e. 'resource investment'). In this way, it is hypothesised that resources tend to produce further resources, thus creating ‘resource caravans’, resulting in more positive outcomes like improved coping and well-being (Hobfoll, 2002). In contrast, resource loss is the major factor in predicting the impact of a stressful event on an individual (Hobfoll, 1989, 2001). Initial resource loss is likely to contribute to long-term loss cycles, which translate into ongoing difficulties in recovery (Hobfoll, Tracy, & Galea, 2006). In a community sample, resource loss was the best predictor of PTSD following hurricane Andrew (Benight et al., 1999; Ironson et al., 1997). Whilst COR theory has not been applied to the development of PTSD in police populations it presents a helpful extension to the more traditional stress-appraisal approaches (e.g. Lazarus & Folkman, 1987) and Papazoglou’s (2013) PCST in understanding PTSD in this population, given the significant cumulative impact of police organisational stressors and demands.

A potential resource, according to Hobfoll (2001), is social support. Research has linked social support and PTSD through a number of cognitive, social and developmental theories (Lepore, 2001; Ehlers & Clark, 2000; Charuvastra & Cloitre, 2008). Large meta-analytic reviews, conducted across a range of populations, have indicated that a lack of social support is one of the strongest risk factors for PTSD (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2008). Similar findings have been replicated in police populations (Prati & Pietrantoni, 2010). More recent qualitative evidence has also highlighted the positive impact of supportive interactions with colleagues, friends, and family following trauma exposure (Evans, Pistrang, & Billings, 2013). This being said, research in police populations has also highlighted a number of

barriers to social support including stigma and individual help seeking-behaviours (Watson, 2013).

Individual Factors. A range of individual factors have also been identified as important in the development of PTSD in police populations including age, gender and personality. Firstly, some authors argue that it is not the experience of multiple traumas, but that an officer's age is the most important factor. Renck, Weisæth, and Skarbö (2002) found that older police officers (age 51 to 60 years) scored higher than younger officers in terms of PTSD symptomatology (on the IES-R). Similarly, Darensburg et al. (2006) found that officers who were 50 years or older had a 40% higher PTSD prevalence ratio than officers aged 40 years old or younger, but also found that age was positively correlated with length of police service. Thus, older officers were more likely to have been exposed to traumatic work incidents for a longer period of time and as such lend support for the theory by Papazoglou (2013), that it is the cumulative exposure to traumatic events which increases officers' risk of developing PTSD as their time in service increases. However without longitudinal data on trauma exposure such a conclusion is only speculation.

Research to date has been inconclusive as to the role of gender in the development of PTSD. Studies within the general population have typically found that female gender is a risk factor for PTSD. However, studies using police populations often find no gender differences in PTSD (Carlier et al., 1997), although this is not always the case (Breslau, Chilcoat, Kessler, & Davis, 1999). In a sample of police personnel who responded to the 2001 World Trade Centre attack, Bowler et al. (2010) found a significant gender difference between the prevalence of probable PTSD (women 13.9%; men 7.4%).

Gender-specific risk factors were also found. For men, risk factors were: presence at the attack and Hispanic ethnicity; and for women, witnessing horror and education less than a college degree. Taken together, these findings may suggest that the mechanism through which men and women develop symptoms of PTSD may differ, rather than a significant difference in overall prevalence rates.

Personality traits, including introversion (Carlier et al., 1997), and neuroticism (Breslau, Davis, Andreski, & Peterson, 1991) have been identified as risk factors in the development of PTSD, although findings have been inconsistent (Carlier et al., 1997). Some authors have suggested that it is not the personality trait but rather the influence of personality characteristics such as coping strategy. In a sample of Australian police officers, Evans, Coman, Stanley and Burrows (1993) found that a common coping strategy used by officers was to keep one's feelings to oneself. These findings were supported by a longitudinal study which found that a difficulty in expressing feelings predicted PTSD symptoms at three months following trauma exposure (Carlier et al., 1997). One explanation is that the role of police culture militates against the expression of emotions (Joyce, 1989), in that police officers must be able to effectively combine empathy for victims whilst being able to maintain distance from the person (Badger, Royse, & Craig, 2008). Therefore emotionally separating is important to protect issues raised in officers' professional life 'over-spilling' into their personal lives, and vice versa (Newell & MacNeil, 2010). However, as a result, officers may not deal effectively with their emotional reactions to stressful situations (Evans et al., 1993).

Internal Factors. The notion that people can react differently to the same event was captured in the transactional model of stress (Lazarus & Folkman, 1987). It was

proposed that individuals evaluate stressful situations through assessing a situation with respect to a person's well-being (primary appraisals) as well as his or her ability to cope with the situation (secondary appraisals). Research has suggested that such appraisals can be influenced by personality and demographic characteristics and learned behaviour patterns (e.g., coping style), and more situation-specific factors (e.g., perceived control of situation; Lazarus, 1999), capturing what has been discussed previously in this chapter.

Application of Lazarus and Folkman's (1987) model to police officers suggests that officers make sense of a traumatic event based on primary and secondary appraisals (or threat appraisals). Primary appraisals refer to some anticipated harm or loss, capturing the often uncertain and unpredictable nature of policing. Secondary appraisals which reflect an officer's belief in their ability to cope with a situation are also proposed to be important in determining the impact of an event. Some research into the role of primary appraisals in the development of PTSD has found that the type of critical incident was not significantly related to PTSD symptoms. However the severity of the critical incident was the only predictor of PTSD symptoms at both 3 and 12 months (Carlier et al., 1997). This has been supported by Marmar et al. (2006) who found that officers whose narratives contained high personal threat reported more peri-traumatic dissociation, peri-traumatic emotional distress, and current hyper-arousal symptoms. However, Carlier, Lamberts, and Gersons (2000) raised questions about the directionality of this relationship and found that officers with self-reported symptoms of PTSD were more likely view a trauma event as containing more threat and vulnerability than those without such symptoms.

The impact of primary appraisals on PTSD symptoms raise important questions as to the impact of previous trauma experiences, both directly and indirectly, in the development of

subsequent responses to trauma. Follette, Polusny, and Milbeck (1994) found that police officers who reported a history of childhood abuse showed greater use of negative coping strategies, compared to non-abused officers, thus potentially having an indirect impact on PTSD. However, some authors suggests that it is not trauma exposure that increases risk, but rather prior untreated PTSD (Breslau, Peterson, & Schultz, 2008). Janoff-Bulman (1992) suggested that an individual who has experienced previous trauma will respond to subsequent traumatic events depending on the extent to which they have successfully "re-established a stable, nonthreatening, integrated, inner world" following the initial trauma (p. 90). The potential for positive outcomes following previous trauma exposure may explain why Follette et al. (1994) also found that officers with trauma histories used more positive coping strategies than non-abused officers, and why Burke and Shakespeare-Finch (2011) found that the experience of a traumatic event prior to joining the police was related to positive emotional outcomes from exposure to further adverse events over a 12 month period.

Secondary appraisals which reflect an officer's belief in their ability to cope with a situation is also important in determining the impact of an event. Police officers are placed in a role of authority and control over members of the public. At the same time they also encounter a number of events that are beyond their control. As such, officers may experience cognitive dissonance as they attempt to make sense out of such opposing events (Violanti, 2006). Carlier et al., (2000) argued that the more uncontrollable or unpredictable an event is perceived, the greater the risk of developing posttraumatic symptoms. Studies have indicated that officers who appraise events as controllable, exhibit less psychological distress (and physical health problems) than do those who maintain an external locus of control (e.g. Cooper, Kirkcaldy, & Brown, 1994).

To summarise, there is evidence to suggest that police officers are at risk of developing PTSD symptomatology due to the repeated and prolonged exposure to stressful and traumatic events. However as not all police officers develop PTSD, other factors including individual variables (e.g. gender, age, and personality) and internal variables (e.g. primary and secondary appraisals) have also been suggested to contribute. Despite the identification of a number of factors, there is still a need to further understand the development of PTSD within the police force. Recently, there has been some evidence to suggest the impact of burnout in the development of PTSD, this will now be explored and the potential application to the police force discussed.

Occupational Burnout

Unlike other professions, police officers are exposed to stressful situations (organisational and operational) on a daily basis. Burnout has been described as the consequence of this cumulative stress that has not been recognised or managed (Bierens De Haan, 2005). It could be argued that police officers, more than ever, have to manage increasing organisational stressors as the UK police force currently undergoes a programme of unprecedented change. Still suffering the consequences of the austerity plan set out in the October 2010 comprehensive spending review which required a 20% real terms reduction in central funding for the police service by 2014 to 2015 (compared to an increase of 24% from 2000 to 2001), police forces in England and Wales had to make significant savings while striving to maintain frontline capacity to fight crime and antisocial behaviour. Given that such organisational pressures are more prominent than ever (Hesketh, Cooper, & Ivy, 2015), it seems pertinent to explore the impact of burnout on an officers' management of traumatic stressors. However, in order to understand the nature of

burnout in the police, and its relationship to PTSD, the literature relating to its conceptualisation and theoretical framework will be discussed.

Definition and Theoretical Framework. The most widely used definition of burnout has been Maslach and Jackson's (1981) description which highlighted three key components: emotional exhaustion, depersonalisation, and reduced personal accomplishment. Research has commonly used the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981), which is based on these three components. However, a number of authors raised concerns about the psychometric properties of the MBI, including, problems with the reproducibility of its factor structure (Fimian & Blanton, 1987; Powers & Gose, 1986), the limited internal consistency of the depersonalisation sub-scale (Schaufeli & Van Dierendonck, 1993), and the one-sided wording of the items (Halbesleben & Demerouti, 2005). These concerns led to a revised conceptualisation of burnout with a focus on only two constructs: exhaustion and disengagement, captured within the Oldenburg Burnout Inventory (OLBI; (Halbesleben & Demerouti, 2005). Exhaustion (physical and emotional) includes feelings of emptiness and a strong need for rest. Disengagement may include distancing oneself from the content of one's work and experiencing negative, cynical attitudes and behaviours towards work in general.

Burnout, as an accumulation of unmanaged stress, has been defined as a disruption of equilibrium of the cognitive-emotional-environmental system by external factors (Lazarus & Folkman, 1987). This could be thought of as an imbalance between job demands and job resources (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Job demands refers to the physical, social and organisational aspects of the job that require sustained physical effort and are therefore associated with certain psychological and physiological costs.

Job resources can include physical, psychological, social, organisational aspects of the job that: 1) are functional in achieving goals, 2) reduce job demands or 3) stimulate personal growth and development.

The Job Demand-Resources Model (Demerouti et al., 2001) theorised that psychological burnout occurs as a consequence of both high job demands and low job resources. This reflects the idea that people can be healthy even after exposure to high job demands, as long as they have high job resources (Richter & Hacker, 1998). According to Demerouti et al. (2001), job demands have been found to be primarily and positively related to emotional exhaustion (i.e. exhaustion subscale on the OLBI), whereas low resources are primarily and negatively related to disengagement from work (i.e. disengagement subscale on the OLBI; Figure 1). Demerouti et al. (2001) also suggest that whilst exhaustion and disengagement are correlated, they are not necessarily causally related to each other. However it is possible that exhaustion develops faster than disengagement because individuals are more sensitive to job demands (Hobfoll, 1989).

Burnout in the Police. For the individual police officer, symptoms of burnout have been associated with medication use, thoughts of suicide (Burke, 1994; Mikkelsen & Burke, 2004) number of sick days (Mikkelsen & Burke, 2004) and health complaints (Michinov, 2005). Research has also highlighted the impact on an individual's family, with symptoms of burnout found to correlate with officers' display of anger, spending

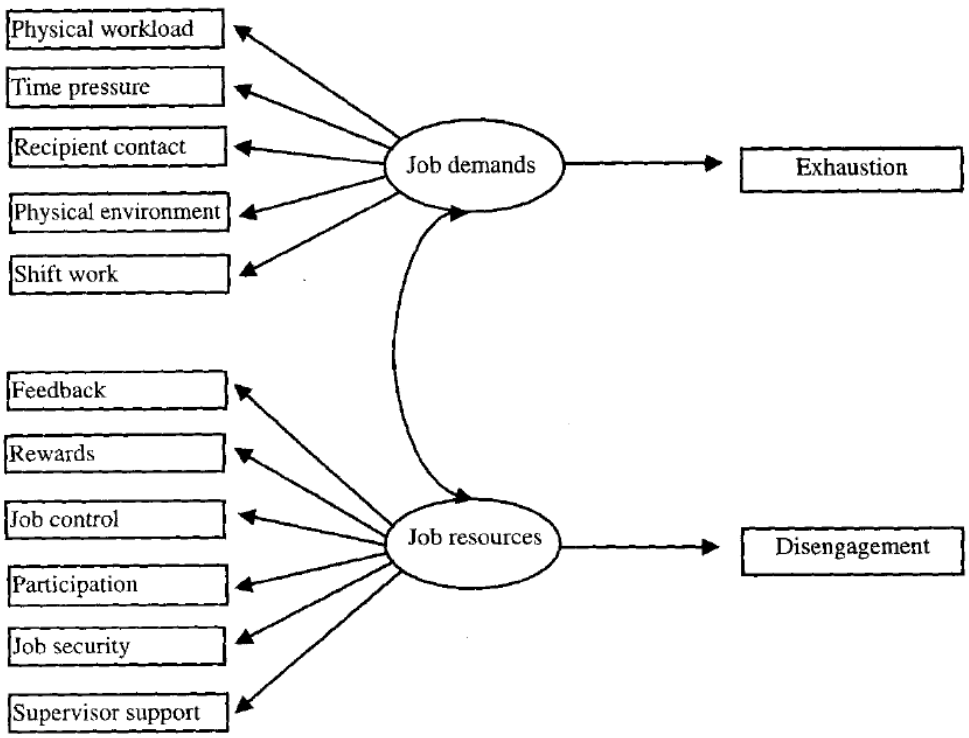

Figure 1. The Job Demands-Resources Model of Burnout (Demerouti et al., 2001).

time away from their family (Jackson & Maslach, 1982) and intra-family conflict (Mikkelsen & Burke, 2004). From an organisational perspective, burnout has been related to how police officers engage with the public, attitudes towards the use of violence (Kop, Euwema, & Schaufeli, 1999), behaviour in violent confrontations (Euwema, Kop, & Bakker, 2004) and attitudes towards the police organisation (Kop et al., 1999).

Due to the significant consequences of burnout on the individual, families and the organisation, research has tried to identify risk factors which may contribute to the development of burnout and, to date, has included differences in gender, age and personality. Firstly, Johnson (1991) found that female officers scored relatively high on emotional exhaustion, whereas males scored relatively high on depersonalisation on the MBI. Cannizzo and Liu (1995) reported that police officers with between 16 and 25

years of work experience scored highest on emotional exhaustion and depersonalisation. However neither of these studies reported actual scores on the MBI as requested in the original instructions (Maslach & Jackson, 1981) making direct comparison of burnout impossible. With regard to the role of personality, again, using the subscales of the MBI, emotional exhaustion and depersonalisation have been negatively correlated to extraversion, agreeableness, and conscientiousness and positively to neuroticism: whereas personal accomplishment correlated positively with extraversion, agreeableness and conscientiousness and negatively with neuroticism (Medina, 2007).

Emotional dissonance in police officers has been shown to be positively related to burnout as well as mediating the relationship between emotional job demands and burnout (Bakker & Heuven, 2006; van Gelderen, Bakker, Konijn, & Demerouti, 2011). Police officers are often asked to show compassion, understanding and warmth toward individuals (e.g. victims of crime), whilst also maintaining a more detached, objective stance. Emotional dissonance can occur when there is a discrepancy between an officer's inner feelings and the emotional display required of them at that time. Bakker and Heuven (2006) proposed that burnout in these circumstances could be due to the increased effort that would have to be exerted into regulating emotional displays, thus further depleting emotional resources. However, van Gelderen et al. (2011) proposed that the suppression of (negative) emotions may not necessarily be detrimental to the police officers' well-being, but that it depends on the emotion that has to be suppressed. The authors reported that in a sample of police call-centre workers, the suppression of anger and abhorrence were positively related to exhaustion at the end of the work shift, whereas sadness was not. In the general population, the suppression of emotions has been found to

disrupt communication, heighten stress levels, drain cognitive resources, and can even impair memory (Butler et al., 2003; Gross, 1998; Richards & Gross, 1999).

Relationship between Burnout and PTSD

Unlike other professions, police officers are almost certain to be repeatedly exposed to stressful situations which can lead to burnout. It is therefore important to explore the relationship between burnout to PTSD, another well-established negative consequence of being within the profession. This is also important as some authors have proposed that burnout and PTSD may even share similar developmental processes. In particular, Bierens De Haan (2005) theorised that burnout can occur when the level of general and traumatic stress exceeds an individual's ability to cope. This notion once again highlights the potential role of individual appraisals (e.g. Lazarus & Folkman, 1987) in the development of both PTSD and burnout (Regehr & LeBlanc, 2011). As the relationship between burnout and PTSD is an emerging area of research, with little attention paid to police population thus far, a systematic literature review was carried out with a broader focus on occupations at high-risk of exposure to traumatic events.

Literature Search. Three bibliographic databases ('CINAHL Complete', 'PsycINFO' and 'PsycARTICLES') were searched using a comprehensive search strategy (Table 1) in order to capture all relevant literature. The search produced 113 articles which were read at abstract level to assess eligibility based on exclusion and inclusion criteria (Table 2). The inclusion of articles after 2013 was due to a comprehensive meta-analytic review being published online in 2013 (Cieslak et al., 2014; published online prior to print date) on the relationship between burnout and STS. This review was

included within the broader review of the literature. All relevant studies were screened for citing, or being cited by, other potentially relevant studies. This identified a further study (Boudoukha, Altintas, Rusinek, Fantini-Hauwel, & Hautekeete, 2013).

Table 1

Database Search Terms and Limiters

Step	Search Terms	Limiters	Result	Relevant Studies
1	'PTSD' OR 'Post trauma* stress' OR 'STS' OR 'secondary trauma* stress'	-	48, 427	-
2	'Burnout' OR 'burn-out'	-	16,135	-
3	('PTSD' OR 'Post trauma* stress' OR 'STS' OR 'secondary trauma* stress') AND ('Burnout' OR 'burn-out')	-	454	-
4	('PTSD' OR 'Post trauma* stress' OR 'STS' OR 'secondary trauma* stress') AND ('Burnout' OR 'burn-out')	Language: English	438	-
5	('PTSD' OR 'Post trauma* stress' OR 'STS' OR 'secondary trauma* stress') AND ('Burnout' OR 'burn-out')	Language: English; Publication date: 2013-present	151	-
6	('PTSD' OR 'Post trauma* stress' OR 'STS' OR 'secondary trauma* stress') AND ('Burnout' OR 'burn-out')	Language: English; Publication date: 2013-present; Article Type: Peer-Reviewed	113	5

Table 2

Inclusion and Exclusion Criteria for Systematic Literature Search

Inclusion	**Exclusion**
Studies published after 2013 (inclusive)	Studies published before 2013
Peer-Reviewed Articles	Non peer-reviewed articles
Samples of professional groups who are directly or indirectly exposed to traumatic situations as part of their occupation	Studies which use community samples of individuals exposed to traumatic incidents
Studies which directly explore the relationship between burnout and PTSD/STS	Studies which do not directly explore the relationship between burnout and PTSD/STS
Studies which measured STS or PTSD symptomatology	Studies which measured vicarious trauma/compassion fatigue *Exceptions*: Studies which assessed STS as a subscale (e.g. ProQoL)
Studies which assessed trauma response	Studies which assessed only trauma exposure (e.g. type of trauma) and not the subjective response.
English language	Studies written in non-English languages

The search resulted in six articles (Table 3) which explored the relationship between symptoms of burnout and post-traumatic stress, including two reviews (Cieslak et al., 2014; Sheen, Slade, & Spiby, 2014), and four primary articles (Boudoukha et al., 2013; Hinderer et al., 2014; Sheen, Spiby, & Slade, 2015; Shoji et al., 2015). All primary articles used quantitative methodology, whilst the reviews included both quantitative and

qualitative studies. This review critically examined the methodology of each article before summarising the emerging evidence.

Table 3

Summary of Selected Papers.

Authors	**Study Design**	**Profession (*Sample Size*)**	**Outcome Measures**
Sheen et al., (2014)	Systematic review	Health providers (*Not reported)*	BO: Various; PTSD: Various
Cieslak et al., (2014)	Meta-analysis	Occupations with high risk of direct and indirect work-related exposure (*8256*)	BO: Various; PTSD: Various
Hinderer et al., (2014)	Cross-sectional	Trauma nurses (*128*)	BO: Professional Quality of Life Scale (ProQOL); PTSD: The Penn Inventory (STS)
Sheen et al., (2015)	Cross-sectional	Midwives (*421*)	BO: MBI; PTSD: Impact of Events Scale - Revised (IES-R)
Shoji et al., (2015)	Longitudinal	(1) Behavioural or mental healthcare providers working with traumatised military personnel (*135*) (2) Human services professions working with traumatised civilians (*194*)	BO: OLBI; PTSD: Secondary Traumatic Stress Scale (STSS)
Boudoukha et al., (2013)	Cross-sectional	Prison correctional officers (*240*)	BO: MBI; PTSD: IES-R

Note. BO = measure of burnout; PTSD = measure of PTSD; OLBI = Oldenburg Burnout Inventory; MBI = Maslach Burnout Inventory; IES-R = Impact of Events Scale Revised.

Methodological Quality of Studies. Four of the six relevant studies were neither randomised controlled trials (RCTs) or measures of intervention efficacy and as such, no formal tools were used to assess methodological quality (e.g. Downs & Black, 1998). Rather, judgement was made with reference to the Critical Appraisal Skills Programme Tools (CASP, 2015) and critical appraisal strategy guidance (Greenhalgh, 1997a). One of the five studies (Cieslak et al., 2014) was a systemic review and therefore open to quality review using the specific CASP Tool for Systematic Reviews (CASP, 2015) and guidance from (Greenhalgh, 1997b). Quality appraisals were not subject to inter-rater consensus, and form the subjective judgement of the individual author.

Sampling. All of the studies recruited from occupations with higher likelihood of both direct and indirect work-related exposure including, rescue/emergency workers, nurses, ambulance workers, paediatric care workers, and fire-fighters. Given the diverse range of populations from which samples were recruited, it is likely that the variability is vast. This was highlighted by Cieslak et al. (2014) who note that in their meta-analytic review, samples include individuals routinely exposed to direct trauma (e.g. fire-fighters), and those exposed to indirect trauma (e.g. counsellors). Whilst this makes comparison between studies and generalisability of findings difficult, the review will hopefully provide an insight of the emerging literature within the field of burnout and PTSD, across all populations.

Measures. This section aims to provide an overview of the tools used to measure both burnout and PTSD in the current review. Firstly, burnout was defined as consequences of work related-stress focusing on the emotional exhaustion component of burnout, as measured by the Maslach Burnout Inventory (MBI; Maslach & Jackson,

1981), the Oldenburg Burnout Inventory (OLBI; Halbesleben & Demerouti, 2005), the Rescue Worker Burnout Questionnaire (Musa & Hamid, 2008), the Burnout Measure (Malach-Pines, 2005), or the Copenhagen Burnout Inventory (Kristensen, Borritz, Villadsen, & Christensen, 2005). Measures of burnout were also used which were defined as referring to lack of well-being, negative attitudes toward work, work overload, or a lack of self-acceptance, measured by the burnout subscale of the Professional Quality of Life (ProQOL; Stamm, 2010), the Compassion Fatigue/Satisfaction Self-Test (CFST; Figley & Stamm, 1996), the Compassion Fatigue Questionnaire (CFQ; Figley & Kleber, 1995), or the Compassion Fatigue Short Scale (CFS-R; Adams, Boscarino, & Figley, 2006).

The four primary studies utilised different measures of assessing PTSD symptoms. The IES-R (Weiss & Marmar, 1997) used by two of the selected paper (Boudoukha et al., 2013; Sheen et al., 2015) is a 22-item self-report measure that directly assessed only 14 of the 17 DSM-IV symptoms of PTSD. The Post Traumatic Stress Disorder Scale (PDS; Foa, 1995) was utilised by studies within the systematic review and was the only scale that assessed all of the DSM-IV criteria for PTSD (i.e., Criteria A - F). Both the PDS and IES-R yield symptom severity scores. Although not generally used to diagnose PTSD, the enquiry about an experience of a Criterion A traumatic event means that cut-offs cited in the literature may give a preliminary diagnosis of PTSD. In contrast, Hinderer et al. (2014) used the Penn Inventory (Hammarberg, 1992) to assess DSM-IV symptoms of PTSD. As with the PDS and IES-R it also yields a continuous score with cut-offs, however does not ask that symptoms are answered in relation to a specific trauma event. Given the nature of work that trauma nurses undertake, this may be appropriate as to

attempt to attribute PTSD symptoms to a particular incident may be arbitrary and unrealistic.

The two systematic reviews included a variety of measures of PTSD. In addition to the measures described above, specific measures of STS were also included. Most commonly used was the Secondary Traumatic Stress Scale (STSS; Bride, Robinson, Yegidis, & Figley, 2004), a 17-item self-report measure. Although designed to measure STS following 'exposure to clients', all items map directly onto the DSM-IV symptom clusters for PTSD: intrusion, avoidance, and arousal. STS was also measured using a subscale of the Professional Quality of Life Scale (ProQOL, Stamm, 2010), which again reflects DSM-IV symptom clusters (Stamm, 2010). Additionally, in order to capture STS, both the systematic reviews include studies utilising measures of vicarious trauma (e.g. Institute Belief Scale; Pearlman, 1996), and compassion fatigue (e.g. Secondary Traumatic Stress subscale of the ProQOL; Stamm, 2010). Whilst overlapping in measurement and definition, studies which used measures of vicarious trauma and compassion fatigue (excluding studies which make direct reference to the STS subscale of the ProQOL) have not been discussed due to the need for focus on the distinct construct of STS.

The differential consequences resulting from direct or indirect trauma exposure raises the question of how the selected articles have captured trauma exposure. From the four primary articles, three used specific measures to record trauma experience. Shoji et al. (2015) used the Secondary Trauma Exposure Scale (Cieslak et al., 2013), whilst Boudoukha et al. (2013) used a non-standardised 'victimization index', an inmate's-to-staff assaults questionnaire. Sheen et al. (2015) excluded 43 midwives as they had not

experienced a peri-natal trauma. The authors also enquired as to whether midwives had experienced direct, indirect or personal trauma. This helped them to report that midwives who had experienced trauma directly and indirectly (e.g. hearing a woman's account of perinatal trauma) reported more severe PTSD symptoms (Sheen et al., 2015). In contrast, Hinderer et al. (2014) inferred exposure to traumatic events based on associated variables (e.g. years trauma nursing, percentage of time in direct patient care), thus making an assumption about the cumulative effect of trauma over time. Given the limitations of this method, future research should aim to be specific about the information they capture in terms of type (indirect/direct) and context (work/non-work).

Emergent Evidence. Three studies used a cross-sectional design (Boudoukha et al., 2013; Hinderer et al., 2014; Sheen et al., 2015) in order to explore the relationship between burnout and PTSD. Sheen et al. (2015) found that a higher level of overall PTSD symptoms were moderately associated with a higher level of emotional exhaustion ($r = .42$, $p < .001$), and there was also a small association between more severe symptoms of overall PTSD symptoms and a greater level of depersonalisation ($r = .25$, $p < .001$). A regression model within the same study found the combined symptoms of avoidant symoptomatology on the IES-R (plus worldview beliefs) accounted for 23% of the variance in the emotional exhaustion subscale, and 14% of the variance of the depersonalisation subscale on the MBI suggesting that symptoms of trauma significantly predicted burnout. These findings should be interpreted with some caution, given the low response rate (16%) from the postal survey. It could be argued that midwives who experienced greater symptoms of PTSD may have avoided taking part in the study (avoidance being a symptom cluster in PTSD diagnosis; APA, 2013). Thus, the results may be an underrepresentation of PTSD symptomatology within the wider population.

In support of Sheen et al. (2015), Hinderer et al. (2014) found that in a sample of trauma nurses, higher levels of burnout was correlated with increased PTSD symptoms (r = .55; p = .00). Similarly, Boudoukha et al. (2013) found in a sample of correctional officers in a prison, a strong positive correlation between emotional exhaustion and depersonalisation subscales on the MBI (not personal accomplishment) and PTSD symptoms (using IES-R global score). Voss Horrell, Holohan, Didion and Todd (2011) suggested that the strong associations between PTSD symptoms and burnout might result from common risk factors. In particular, it is possible that particular patient, professional, or organisational characteristics would increase the probability of developing burnout, STS, and PTSD-like symptoms.

Building upon these findings, and in contrast to the analysis by Sheen et al. (2015), Hinderer et al. (2014) and Boudoukha et al. (2013) used regression analysis to estimate the relationship of burnout on PTSD. A linear regression analysis (Hinderer et al., 2014) found that burnout (and compassion satisfaction) predicted 35.9% of the variability in PTSD scores within the model. Boudoukha et al. (2013) used a hierarchical cluster analysis to categorise low, medium and high risk profiles for PTSD. A logistic regression using these profiles as dependent variables found that high emotional exhaustion on the MBI was associated with higher risk for prison workers to develop PTSD symptoms. Moreover, results indicated that depersonalisation on the MBI differentiated between individuals who were rated as having a 'PTSD high risk' profile and 'low risk' profile. In contrast, depersonalisation did not differentiate between 'moderate risk' and 'low risk'.

Research has more recently turned its attention to STS or 'indirect' trauma, highlighted by the two recent reviews by Cieslak et al. (2014) and Sheen et al. (2014). Sheen et al.

(2014) found that symptoms of burnout positively correlated with symptoms of traumatic stress resulting from indirect trauma (e.g. Burtson & Stichler, 2010; Yoder, 2010). These findings supported the review by Cieslak et al., (2014) which found that in samples of workers indirectly exposed to trauma, the association between STS and burnout was high, sharing as much as 48% of the variance. Interestingly, Cieslak et al. (2014) found weaker associations between STS and burnout among professionals who, based on their profession, were likely to be both directly and indirectly exposed to trauma at work (e.g. soldiers), compared to occupations that were likely to involve only indirect exposure (e.g. counsellors). Individuals exposed to direct trauma at work may be resilient due to better preparedness and training (Palm, Polusny, & Follette, 2004), or due to protective effects of self-selection (van der Velden et al., 2013), and as such may suffer from work stress (i.e. burnout), but not present STS symptoms. Despite the recent inclusion of both indirect and direct trauma experiences within Criterion A for a PTSD diagnosis (APA, 2013), there may continue to be some value in distinguishing between indirect and direct trauma as to develop an understanding of the different mechanisms through which trauma response occurs.

In contrast to suggestions regarding common risk factors and overlap between burnout and STS (Voss Horrell et al., 2011), a longitudinal study by Shoji et al. (2015) explored the direction of the relationship between these two concepts within a group of 329 mental health professionals working with traumatised clients. They found that job burnout at Time 1 led to STS at Time 2 (six months later), but STS at Time 1 did not lead to job burnout at Time 2. These findings are in line with the conservation of resources theory (COR; Hobfoll, 1989) which may provide an argument for a uni-directional relationship between burnout and PTSD. According to COR, the exposure to stress may deplete an

individual's resources, thus leading to resource exhaustion (Hobfoll, 1989). Emotional exhaustion, a facet of job burnout on the MBI, may represent a loss of resources. COR theory suggests that a loss of resources may increase the risk of developing negative psychological consequences if exposed to subsequent stressors.

Conclusion. The co-existence of both burnout and PTSD (Hinderer et al., 2014; Mealer, Burnham, Goode, Rothbaum, & Moss, 2009; Sheen et al., 2015) lend support to the ideas regarding common risk factors (Voss Horrell et al., 2011). However, the findings of and Shoji et al. (2015) suggest the existence of a uni-directional relationship between burnout and PTSD and the potential risk of cumulative stress (Bierens De Haan, 2005) and loss of resources (Hobfoll, 1989). Boudoukha et al. (2013) suggest that emotional exhaustion and depersonalisation levels may represent a form of psychological adjustment problem prior to experiencing the target stressor, which then acts as a risk factor for the development of PTSD (Ozer et al., 2008). Thus, burnout may be seen as a risk factor for PTSD (Boudoukha et al., 2013). Similarly, the findings by Shoji et al. (2015) may also imply that the loss of resources due to job burnout may play a critical role in determining an individual's ability to deal with exposure (directly or indirectly) to subsequent stressful or traumatic events in line with COR theory (Hobfoll, 1989). Shoji et al. (2015) suggest that to break this relationship, new resources should be developed through focused intervention programs. Unfortunately, their research does not suggest what these resources may be. However, a consistent protective factor appearing in both burnout and PTSD literature is social support (Javidi & Yadollahie, 2011; Ozer et al., 2008; Houdmont, 2012), and as such, may be thought of as a potential 'resource' (Hobfoll, 1989).

Social Connectedness

Social Connectedness and Social Support. Lack of social support is one of the strongest risk factors for PTSD following exposure to trauma in the general population (Javidi & Yadollahie, 2011; Ozer et al., 2008). In police samples, lack of support at work (including peer and managerial support), has been associated with high sickness absence and burnout (Barak, Nissly, & Levin, 2001; Houdmont, 2012). A recent prospective study of police recruits also found that greater social support and social functioning (as defined by an individual's satisfaction with their social situation) was associated with lower PTSD symptoms after two years of service (Yuan et al., 2011). However, research into social support has been plagued by lack of consistency in both definition and measurements. Haslam, Cruwys, Haslam, and Jetten, (2015) proposed that social support does not go as far as to reflect the internal experience of the individual and does not capture what it means to be fully socially connected. Current research may therefore be missing an opportunity to further our understanding of the role of social relationships within the police force.

Definition and Theory of Social Connectedness. The concept of being socially 'connected' emerged from Kohut's (1984) self-psychology theory from within the field of psychoanalysis. Kohut acknowledged that individuals strive for a sense of belongingness or 'being part of' in order to avoid feelings of loneliness and isolation. Belongingness, according to Lee and Robbins (1995), incorporates affiliation, connectedness and companionship. Developmental literature on belongingness and attachment (e.g. Lyddon, Bradford, & Nelson, 1993) asserts that companionship originates in early infancy and extends throughout the lifespan. Close contact with the caregiver provides the child with

a sense of security and likeness, thereby serving as a foundation for the development of self-esteem. Following this, affiliation during childhood and adolescence supports the child to establish peer relationships with similar others. Peer relationships build the child's self-esteem and allow the child to extend themselves beyond the parent figure.

Although connectedness has been described as emerging during adolescence it remains important throughout the lifespan (Lee & Robbins, 1995). As a socially connected adult, an individual is able to feel confident and comfortable within wider social contexts, allowing the feeling of 'being human among humans' (Kohut, 1984, p. 200). As people increase their sense of belonging and connection, they develop a stable, secure sense of connectedness (Baumeister & Leary, 1995; Kohut, 1984). In this way, Lee and Robbins (1998) described social connectedness as a relational schema or a 'cognitive structure representing regularities in patterns of interpersonal relatedness' (Baldwin, 1992, p.461). Thus, social connectedness captures the idea of the self in relation to others. In this way it is different to a sense of belongingness which can be defined as group membership or peer affiliation (Baumeister & Leary, 1995).

As a consequence of these proposed developmental processes, Lee and Robbins (1995) suggest that people with high social connectedness will tend to feel very close with other people, easily identify with others, perceive others as friendly and approachable, and participate in social groups and activities (Lee & Robbins, 1995). Furthermore, individuals with high levels of social connectedness will have a greater tolerance and respect for interpersonal differences and temporary lapses in belonging because of an underlying sense of connectedness (Baker & Baker, 1987). Conversely, a person who struggles to feel connected may begin to feel distant and different to others, they may try

to relate but feel frustrated that others do not understand them, potentially leading to isolation from roles, relationships and society (Lee & Robbins, 1995).

Impact on Distress. Social connectedness has been shown to positively correlate with a number of interpersonal factors including: trust, attachment security, social competence, fewer interpersonal problems, and identification with social groups (Banai, Mikulincer, & Shaver, 2005; Lee, Draper, & Lee, 2001; Moller, Fouladi, McCarhty, & Hatch, 2003; Williams & Galliher, 2006). Social connectedness has also been positively correlated with affective balance, self-esteem and negatively correlated to anxiety and depressive symptoms, and rejection sensitivity and social avoidance (Lee et al., 2001; Lee & Robbins, 1998; Mashek, Stuewig, Furukawa, & Tangney, 2006; Williams & Galliher, 2006). In a sample of female college students, Lee and Robbins (1998) found that whilst social connectedness was negatively related to trait anxiety (as defined by having perceptions of the world as hostile, threatening and unfriendly), it did not have any significant effects on state anxiety. As such, Lee and Robbins (1998) suggested that social connectedness may operate as a ubiquitous social lens with which to view and interact with the world. People who have low social connectedness remain in, or worsen their situation through the self-perpetuation of negative social appraisals by seeking out confirmatory information in the social world (Lee & Robbins, 1998).

Relationship between Social Connectedness and PTSD

The relationship between social connectedness and PTSD is an emerging area of research. A thorough search of the literature was conducted using relevant search terms but only one study was identified; therefore a systematic review has not been presented here. The

one study identified was by McDermott, Berry, and Cobham (2012) who found that following exposure to a cyclone, children with low social connectedness were 3.96 times more likely to experience PTSD symptoms rated a 'severe' or 'very severe' compared to those with high social connectedness. A structural model of child PTSD indicated that connectedness was the most important factor explaining variance in children's symptomatology. The authors concluded that connectedness may represent a vulnerability factor in response to trauma. Thus, interventions which support children to develop connectedness may have the potential to enhance resilience.

In contrast to the conclusions drawn by McDermott et al., (2012), an individual's level of social connectedness may also represent an outcome of trauma exposure. Research has shown that individuals with PTSD frequently report feelings of detachment or estrangement from others (APA, 2000). PTSD has also been associated with poorer marital and family functioning and more impairment in interpersonal relationships and social activities (Schnurr, Lunney, Bovin, & Marx, 2009), as well as difficulties in empathically connecting with others (Nietlisbach, Maercker, Rössler, & Haker, 2010). Snell, Surgenor, Dorahy, and Hay-Smith (2014) carried out semi-structured interviews with a sample of police officers who worked during the 2010 and 2011 earthquakes in New Zealand. Resource losses associated with longer-term health outcomes following daily exposure to work and non-work related disruptions included the social impacts on connectedness to home, work and community.

Given the dearth of research into social connectedness, a broader search of the literature identified a recent study by Schwarzer, Bowler, and Cone (2014) which explored the concept of social integration, as defined by both behavioural (or participatory) and cognitive (felt experience or sense of connectedness) elements of social relationships

(Haslam et al., 2015). The authors found that in a sample of New York police who attended the 9/11 terrorist attack, the higher the self-rated exposure to the event (e.g. directly witnessed the event, saw people running away for the event etc.), the greater the self-reported symptoms of PTSD, but this effect was buffered by a high level of social integration. Social integration was also found to moderate the relationship between PTSD symptoms at baseline (just after exposure to a trauma) and at a three year follow-up. Despite promising findings, conclusions are limited by the use of an unstandardised measure of social integration.

Taken together, these two studies suggest a number of possible ways that social connectedness is related to PTSD. Firstly, McDermott et al. (2012) suggest that social connectedness pre-trauma may be a risk or protective factor in the development of PTSD in children post-trauma. This view is supported by Lee and Robbins' (1998) suggestion that social connectedness may represent a stable, unchanging social lens with which to view and interact with the world which will impact how an individual perceives situations. In a sample of police officers, social connectedness may represent an adjustment factor post-trauma (Snell et al., 2014). Finally, research into overlapping constructs has also suggested a pre-trauma buffering effect of social integration on the development of PTSD. These studies only go some way to highlight the uncertain relationship between social connectedness and PTSD. The lack of consistent measurement of social connectedness and robust methodology suggest that research using a reliable and valid measure of social connectedness in police populations would be useful and novel.

Current Research

Police officers are at significant risk of developing PTSD given the repeated direct and indirect exposure to traumatic situations throughout their career. However, not all officers exposed to such situations develop symptoms of PTSD. Whilst there have been significant attempts to identify risk and protective factors, there is still a need to develop our understanding of the specific factors, unique to the police. In light of this need, two potential factors have been identified for this current research, burnout and social connectedness. To date these factors have not been researched in their relationship to PTSD within the context of the police force.

Firstly, in the current context of an over-stretched police force and increasing stress levels, it is likely that officers are at significant risk of burnout. This may be even more prominent given that the evidence base suggests it is not just operational but organisational factors which contribute most significantly to officer stress and burnout. The conservation of resources theory (Hobfoll, 1989) suggests that not only can the development of burnout be viewed as a loss of resources, but that the existence of burnout will play a critical role in determining an individual's ability to deal with exposure to subsequent stressful or traumatic events. It light of this, it seems necessary to attempt to understand whether burnout is a predictor of PTSD in police officers.

Secondly, there is a wealth of research to suggest the importance of social support in the development of PTSD in police samples (Prati & Pietrantoni, 2010). Social support has been identified as a particular factor that can widen one’s pool of available resources and can replace or reinforce other resources that have been lacking (Hobfoll, 1988). In

contrast, social connectedness may capture a more stable internal experience of interpersonal relatedness, rooted in developmental, social and cognitive theories, thus just not reliant on instances of support at times of stress. With preliminary findings indicating the role of social connectedness in the development of PTSD in children (McDermott, Berry, & Cobham 2012), and the potential impact of changes to the cohesion of police forces as a result of changing recruitment and team structure, it again seems important to explore social connectedness within the police and its relationship with PTSD.

Given that research suggests that both burnout and social connectedness may predict symptoms of PTSD, it was decided to conduct further exploratory analyses into the impact of these variables on the four individual PTSD symptom clusters as defined by the DSM-5 (APA, 2013). The symptom clusters investigated were; 1) Intrusion; 2) Avoidance; 3) Negative alterations in cognition and mood; and 4) Alterations in reactivity and arousal. To the author's knowledge there is no previous research which has focused on the relationship between either of the predictor variables and the individual symptom clusters of PTSD. As such no predictions could be made about these specific sub-factors.

In some ways burnout and social connectedness may reflect opposite ends of the spectrum, with burnout representing a possible loss of resources and social connectedness representing both a direct, and indirect, resource. Both may play an important role of reducing, halting or reversing loss spirals early and should be an important focus (Heath, Hall, Russ, Canetti, & Hobfoll, 2012). In this way, organisations may focus on the development of ‘resource caravans’ (Hobfoll, 2012, p. 118), where resources are supplied, protected, shared, fostered and pooled within an organisation. Such an approach

may offer an opportunity to redirect the focus to the social climate of the organisation rather than externalising failures by blaming employees or groups of employees.

The following hypotheses will be tested:

1. Higher levels of burnout and lower levels of social connectedness will predict higher PTSD severity scores
2. Higher levels of burnout and lower levels of social connectedness will predict higher levels of general distress.
3. Higher levels of burnout and lower levels social connectedness will predict higher levels of sickness absence.

CHAPTER 2

Methodology

Epistemological Positioning

The current study aimed to explore whether social connectedness and burnout predict post-traumatic stress disorder and distress, with a view to contributing to the identification of possible risk factors for the development of PTSD within the police force. This study is theoretically driven, however in order to assess the validity of the assumptions, it is important to recognise, define and justify the epistemological stance of the researcher as well as the context in which the research takes place (Crotty, 1998).

Traditionally, psychology has favoured a 'natural science' or 'positivist' framework, highlighted by the adoption of the scientist-practitioner model in 1949 (Albee, 2000). Positivism assumes objectivity and a quest for patterns and regularities which would, and should be generalised to all similar situations and settings. This positivist stance assumes that in knowledge there is a 'truth' that can be measured using numerical measurement and statistical analysis and that this results in objective knowledge. Fundamentally, it assumes the existence of tested constructs in an objective external reality, devoid of any subjective knowledge or understanding of them (Flick, 2009). In this way, cross-validation of findings leads to the evolution of theoretical models which are therefore considered to be based on valid, and reliable results (Popper, 2005).

The present study could be seen as consistent with this positivist framework in that some of the outcome measures (e.g. PTSD), are clearly operationally-defined by, or informed by external sources (e.g. APA). They are quantifiable and measurable with the view to

using statistical analysis to make certain assumptions about the data, in turn generalising the observed patterns of interest to the wider police force. This could be also thought of as reflective of the police force itself, typically involving 'truth' seeking and objective laws to be obeyed. This being said, it is important to acknowledge that the current study used self-report methodology to obtain the data on the constructs of interest. Such methodology asks individuals to report on their own subjective view of their reality. Therefore, in opposition to the positivist framework, this study aims to consider the constructs of interest in the context of individual and cultural interpretations.

The notion of a subjective reality is particularly important given that our understanding of the main constructs within this study, in particular burnout and PTSD, have, to some degree, been influenced by the dominant discourse of the cultural context within which they present. Firstly, Schaufeli, Leiter, and Maslach (2009) assert that the roots of the burnout concept are embedded within broad social, economic, and cultural developments and reflect the rapid and profound transformation from an industrial society into a service economy. Rather than a globalised construct, the meaning of the concept differs between countries. For instance, in the Netherlands and Sweden, burnout is used as a medical diagnosis and was included in the ICD-10. Whereas, in North America, burnout is a socially accepted label (Schaufeli et al., 2009). Paradoxically, in Europe, burnout as a medical label is popular because it grants individuals access to compensation and treatment programs.

Similarly, Summerfield (2001) argues that PTSD as a distinct disorder was informed by societal and political processes. Changes in British values have traditionally reflected notions of stoicism and understatement; this is captured in famous British quotes, for

example, ‘stiff upper lip’ and ‘keep calm and carry on’. In some African countries a ‘mental health problem’ is most commonly understood as a problem with the devil, resulting in stigma, shame and rejection from society. In contrast, having a diagnosis of PTSD the UK can bring access to NHS services and financial benefits (Conteh, 2011). However, even within the wider British culture, evidence suggests that there is a sub-culture of police personnel who tend to self-deny emotional distress due to its incongruence with police identity and culture (Gersons, 1989). This suggests that an additional contribution of organisational culture may act to both, 'normalise' some emotional responses and to 'pathologise' others (Watson, 2013).

Taken together, the impact of society and culture on the constructs of burnout and PTSD suggest that the present study may exist within a 'social constructionist' frame of reference. This is because social constructionists are less concerned with the 'truth seeking' but with the individual meaning attached to these phenomena within the context of their social environment (Vygotsky, 1978). Of particular relevance to the current study is the construct of social connectedness which attempts to capture the degree of interpersonal connection that an individual experiences with his or her social world. In comparison to PTSD and burnout, social connectedness is not defined by external sources (e.g., APA), however, is still potentially influenced by societal and cultural processes. In many ways, policing requires officers to be suspicious and maintain the edge over the public, contributing to a 'we versus they’ attitude (Kappeler, Sluder, & Alpert, 1998). This contributes to a strengthening of the bond between police officers and facilitates strong group loyalty and support, as well as contributing to the protection from trauma and distress (Yuan et al., 2011). However, as the selection and recruitment of officers has diversified, police forces have become more heterogeneous, and the stereotyped officer of

the past is continually changing. As a result one would expect a single cohesive police culture to give way to a more fragmented occupational group. As society increases pressure to keep everyone ‘connected’ with an ever-extending range of communication tools (e.g., text messaging, email), it may be that changing police culture enables officers to increase connectedness with family and friends outside of their organisation, as connectedness to the organisation and those within it reduces.

Despite the seemingly polarised positions of the positivistic framework and that of an individuals' subjective reality, the researcher assumes a stance in-between, known as 'critical realism'. Bhaskaris (1979) proposed that critical realism is interested in both an individual's interpretation of ‘reality’ (e.g. ideas, concepts, meanings, and categories) as well as the notion of a ‘real world’ (e.g. physical objects). In this way, it is believed that knowledge of constructs is constrained by individual perception and are open to change over time. Taking the critical realist position within the current study reflects the idea that the way an individual interprets a stressful event is a significant risk factor in the development of post-trauma symptoms (Lazarus & Folkman, 1987), but also aims to obtain some 'truth' through a series of questions related to an operationally-defined diagnosis of PTSD. In taking this standpoint, it is accepted that the use of self-report measures in this present study has limitations when attempting to generalise to the wider population of police officers. Furthermore, it is also acknowledged that the researcher’s own views and beliefs regarding the constructs in this study may have influenced the choice of measures. Lastly, in line with many critical realists the analyses will be presented with caution; that the interpretations offered represent possibilities rather than certainties.

Study Design

This research took place within one UK Police Force (hereafter called the 'Force'). The study utilised an online survey methodology developed using the Qualtrics online survey software (Qualtrics, 2015). Standardised self-report measures were used to gather quantitative data on the predictor variables of burnout and social connectedness, and outcome variables of PTSD and distress. Non-standardised measures also sought to capture demographic information and an additional outcome variable of sickness absence.

Change to Study. This study was changed from a longitudinal design (hereafter called the 'original' study) to a cross-sectional design (hereafter called the ‘current’ study). The original study aimed to assess change in symptoms of burnout and PTSD, pre-implementation and post-implementation of the Trauma Risk Management programme (TRiM; Appendix H). However, following the recruitment of participants and collection of pre-implementation data, the Force was not able to implement the TRiM programme as agreed, meaning that post-implementation data could not be collected. As such, the current study was developed, and new research questions were identified and explored using the data that had already been collected.

Participants

Methods of Recruitment. All methods of recruitment were chosen following discussion with, and preferences of, the Force’s Occupational Health department. The Force's operational managers gave permission for personnel in identified 'high risk' departments to take part in the original study. Departments such as motorway policing,

counter terrorist unit and family liaison service were selected by the Force's Occupational Health department due to their exposure to potentially traumatic events, over and above those situations encountered by the typical officer. All participants were recruited through the Force's internal email system. Managers of the selected departments disseminated a recruitment email 'downwards' through their teams to all personnel containing a summary of the study and a hyper-link to the online survey. In order to take part, participants were required to follow the link to the survey. As such, participants formed a self-selecting sample.

Sample Size and Power. Given that sample size contributes to the power of a study, and with no previous literature from which to draw relevant effect sizes, power analyses were performed to determine the minimum number of participants that would be required drawing on Cohen's (1992) operational definitions of small, medium and large effect sizes. Sample size was calculated for a multiple regression analysis with three predictor variables (exhaustion, disengagement, and social connectedness), using Daniel Soper's (2015) online calculator. According to Cohen (1992), given a small effect (.02), 543 participants would be needed to achieve a power of .8 (p <.05). Given a medium effect size (.15), 76 participants would be needed to achieve a power of .8 (p <.05). Finally, given a large effect size (.35), 36 participants would be needed to achieve a power of .8 (p<.05). A medium effect size requiring 76 participants seemed the most reasonable sample to achieve, given that the pool of officers in high risk departments from which the study recruited was only a few hundred. As such, 543 participants required to detect a small effect would have been unachievable within the restricted timeframe in which the survey was open due to academic requirements of the researcher.

Response Rate. The survey website Qualtrics (Qualtrics, 2015) indicated that 164 out of a total of 353 participants who accessed the survey completed it. This means that 189 (53.5%) participants started, but did not finish the survey. Following the change to the original study, the 164 participants were contacted via email and consent was sought to use their data for the current study. Of the original 164 participants, 93 (56.7%) gave consent to have their data used in this way. This meant that data from 71 (43.3%) participants from the original study could not be used (due to participants not responding to the email, or choosing not to have their data used in this way). The online design of the study meant that reasons for non-completion of the original survey, or why some participants did not wish their data to be used for the current study, are unknown. The sample size required to detect a medium effect with .8 power as detailed in the aforementioned power analysis was met.

Measures

An online survey method was deemed most appropriate to gather information from police personnel, taking into consideration time pressures and stigma associated with discussing trauma and other psychological difficulties (Evans, Pistrang, & Billings, 2013). The survey consisted of four standardised self-report measures and three author-generated questionnaires.

Standardised self-report measures. In total, five standardised self-report measures were included in the survey and are presented in detail below:

The Oldenburg Burnout Inventory - Appendix A (OLBI; Halbesleben & Demerouti, 2005). The OLBI is a 16-item questionnaire designed to measure symptoms of burnout and work engagement. Respondents are asked to what extent they agree with a statement using a 5-point likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire is comprised of two subscales, exhaustion and disengagement. The eight items of the exhaustion sub-scale refer to general feelings of emptiness, overtaxing from work, a strong need for rest, and a state of physical exhaustion, for example "after my work, I regularly feel worn out and weary". The eight items on the disengagement sub-scale refer to distancing oneself from the object and the content of one's work and to negative, cynical attitudes and behaviours toward one's work in general, including "I frequently talk about my work in a negative way". Both sub-scales contain four items which are positively worded and four items which are negatively worded. Once the eight negatively worded questions have been reverse scored, a higher score on each subscale indicates a higher level of the burnout (ranging from 8-40 for each subscale). The internal reliability of the OLBI-English version was acceptable; α scores ranged from .74 to .87 (Halbesleben & Demerouti, 2005). Although not previously used in police samples, test/retest reliability has been confirmed for time lags of four months in samples of working adults and fire department employees ($r = .51$, $p < .001$, for exhaustion; $r = .34$, $p < .01$, for disengagement; Halbesleben & Demerouti, 2005). Additionally, the convergent validity of the OLBI and MBI-GS has been confirmed in the United States (Halbesleben & Demerouti, 2005) and Greece (Demerouti, Bakker, Vardakou, & Kantas, 2003). Following a multi-trait multi-method approach, both studies showed that the estimated correlation between the instruments was higher than $r = .70$. Moreover, the parallel scales of both instruments correlated $r = .48$ or higher. Permission to use this measure was sought from, and given by, the authors.

Life Events Checklist - Appendix B (LEC-5; Weathers et al., 2013). The extended Life Events Checklist for DSM-5 (LEC-5; Weathers et al., 2013) was also used to measure trauma exposure, specifically Criterion A of DSM-5 PTSD diagnostic criteria. LEC-5 is a self-report measure which aims to capture an individual's exposure to traumatic events. Specifically, the LEC-5 asks individuals to report their exposure to 16 events which research has shown to potentially result in PTSD or distress. Psychometrics are not currently available for the LEC-5.

The Posttraumatic Stress Disorder Checklist - Appendix C (PCL-5; Weathers et al., 2013). The PCL-5 is a 20-item questionnaire, which corresponds to the DSM-5 symptom criteria for PTSD. Respondents are asked to report how bothered they have been by each of the symptoms in the past month ranging from 0 (not at all) to 4 (extremely). For the purposes of this research, scores from the PCL-5 will be calculated in two ways. Firstly, a total symptom severity score (ranging from 0 to 80) can be obtained by summing the scores for each of the 20 items. Preliminary validity work on the PCL-5 has shown that the cut-off score of 38 points reflects probable PTSD (Weathers et al., 2013). Secondly, DSM-5 symptom cluster severity scores were created through totalling the scores for the items within each cluster, i.e., Cluster B (intrusion symptoms; items 1-5), Cluster C (avoidance symptoms; items 6-7), Cluster D (negative alterations in cognition and mood; items 8-14), and cluster E (alterations in arousal and reactivity; items 15-20). In a sample of veterans, the PCL-5 test scores demonstrated good internal consistency ($\alpha = .96$) and test–retest reliability ($r = .84$). The PCL-5 had excellent convergent validity with the PCL-C ($r = .87$) and discriminant validity with measures of alcohol use and psychopathology ($rs = .08 - .14$; Bovin et al., 2015). A further examination of the PCL-5 in a sample of trauma-exposed college students PCL-5 scores exhibited strong internal

consistency (α = .94), test-retest reliability (r= .82), and convergent (rs = .74 to .85) and discriminant (rs = .31 to .60) validity (Blevins, Weathers, Davis, Witte, & Domino, 2015).

The Depression Anxiety Stress Scales - Appendix D (DASS-21; Henry & Crawford, 2005). The DASS-21 is a 21-item questionnaire designed to measure the three related negative emotional states of depression, anxiety and tension/stress. Respondents are required to indicate the presence of a symptom over the previous week on a 4-point likert rating scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). Each of the three DASS-21 scales contains seven items representing the dimensions of depression, anxiety and stress. Sub-scale scores are derived by totalling the scores. However as the DASS-21 is a short version of the DASS-42 (Lovibond & Lovibond, 1995), the final score of each sub-scale needs to be multiplied by two to produce a range of 0–42. Scores for each sub-scale can then be categorised into either the 'normal' range, through to 'extremely severe' using pre-determined cut-offs (different for each sub-scale; see Appendix D). Internal reliabilities of all subscales in a non-clinical UK sample showed adequate reliability (α =.88 for depression, α = .82 for anxiety, α =.90 for stress, and α =.93 for the total scale; Henry & Crawford, 2005). Concurrent validity was assessed in a large non-clinical US sample. The DASS-21 scales demonstrated good convergent validity with the Mental Component Summary score (MCS; correlations from r = .58 to .69), and Rosenberg Self-Esteem Scale (range of r = .49 to .64; Sinclair et al., 2012). Divergent validity with the Physical Component Summary measure (PCS; correlations ranged from r = .16 to .34) from the SF-8 Health Survey. The DASS questionnaire resides within the public domain, therefore permission was not needed to use it.

The Social Connectedness Scale-Revised - Appendix E (SCS-R; Lee & Robbins, 1995). The SCS-R is a 20-item scale that measures the degree of interpersonal connection that an individual experiences in his or her social world. Respondents are asked to rate to what extent they agree with statements using a 6-point Likert rating scale and range from 1 (strongly agree) to 6 (strongly disagree). Ten statements are positively worded (e.g. 'I feel comfortable in the presence of strangers') and ten negatively worded (e.g. 'I feel distant from people'; which require reverse scoring). The items are then added up to give a total score, a higher score indicating a greater connectedness to others (scores range from 20 to 120). The internal item reliability with an alpha coefficient of .92 also is comparable across studies (Lee, Draper, & Lee, 2001). Concurrent validity was assessed by Williams and Galliher (2006) in a large sample of college students. The SCS demonstrated good convergent validity with Social Competence (TSBI, r = .61 to .74), Self-Esteem (RSES, r = .46 to .63) and Depression (CES-D, r = -.56 to -.58). Divergent validity was also shown with subscales of the Quality of Relationships Inventory (support from mothers, fathers and best friends; r = .19 to .43). Permission to use the scale was sought from, and given by, the authors.

Non-standardised self-report measures. In addition to the measures described above, the survey included author generated measures of demographic information which included age, gender, length of service in the police force, and current department (Appendix F), and sickness absence.

Sickness absence questionnaire - Appendix G. This 2-item measure asked participants to report the total number of days off work due to sickness over the previous two months. This two month period was chosen as it was felt important to capture

occupational functioning within a recent time to fit with the other measures which capture symptoms over the past few weeks. Participants were also then asked to report on the reason for the absence: physical or psychological, with space to give a more detailed description if desired.

Procedure

The procedure will be described in two parts due to the change in research question and design midway through the study. The first part of the procedure relates to the original, longitudinal study, whilst the second part relates to the current, cross-sectional study.

Original Study. The online survey was hosted on the Qualtics website (Qualtrics, 2015). This website was specifically chosen given that the University has previously used it for sensitive online research and that it was compatible with the software Statistical Programme for Social Scientists (SPSS; IBM, 19th Edition) to support analysis of the data. Participants were recruited through the Force's internal email system, this entailed all managers of the target departments disseminating a pre-written email ‘downwards’ through teams to all personnel (Appendix I). The recruitment email contained a short summary of the research with a hyperlink (URL) to the Qualtrics (Qualtrics, 2015) website. The hyperlink took participants to the online survey information page (Appendix J) which informed participants of the aims of the study. At this point there were also details regarding withdrawal from the research and contact details for the researcher. After reading this page, participants were invited to click on a button which took them to the consent page (Appendix K). Consent to take part in the study was sought through the completion of this page. Access to the survey

questionnaires was only gained once this had occurred. On completion of the survey, participants were shown the debriefing page (Appendix L) containing specific information regarding support services within the Force and externally, along with contact details for the researcher and the university. Data collection took place between October 2014 and February 2015. As data was received it was stored remotely and securely on the Qualtrics (Qualtrics, 2015) website to which only the researcher had access. This data was then exported into SPSS directly from Qualtrics (Qualtrics, 2015). A list of email addresses and date of completion were saved in a separate password-protected document.

Current Study. The research questions within the current study (as discussed within the introduction) were developed based on existing literature, and through discussion with the Force's occupational health managers. Once the new research questions had been agreed, ethical approval was sought for the new study (Appendix M). Following ethical approval, the 164 participants were contacted by email to inform them of the change to the study. Participants were asked to respond to the email and indicate whether they gave consent for their data from the original study to be used for the current study (Appendix N). A reminder email was sent to those participants who had not responded after two weeks, which included a deadline for responses (Appendix O). Following that deadline, data of participants who had not responded or who had not given their consent were deleted from the SPSS database.

Data Analysis

Data Cleaning. The data were initially screened for missing data and outliers. Missing data were excluded on a variable by variable basis. Data for participants who did not reach the end of the survey (i.e. the debrief page) were automatically excluded from the analysis as it was assumed that they withdrew consent during participation. Participants who reached the end of the survey but failed to complete an entire measure were not excluded from the analysis of other measures. In all cases, measures had less than 20% of missing values. As such, in line with previous recommendations (e.g. Tabachnick & Fidell, 2007, Peng et al., 2006), mean imputation was permissible and the missing values were replaced with the mean of the non-missing responses for that participant on the items within that scale.

Tests of Normality. All the variables were explored visually and statistically (e.g. Komogorov-Smirnov test). Skewness and kurtosis were also explored due to the large sample size (Field, 2009). This was to ensure that none of the variables deviated substantially from normality which would violate the assumptions of any subsequent parametric analyses.

Internal Consistency. In order to analyse each scale's reliability, all standardised predictor and outcome variables were assessed for internal consistency using Cronbach's alpha. This assessed how closely related the items within each questionnaire were. This analysis was important as none of the standardised measures had previously been used in UK police samples.

Correlations. A series of Pearson's correlations were conducted between all predictor variables. This was to check for associations and multi-collinearity (i.e. where two or more variables measure the same underlying construct). High multi-collinearity between predictor variables can increase the standard errors of the *b* coefficient, and can make it difficult to assess the individual importance of a predictor. Pearson's correlations were also conducted between demographic and outcome variables.

Multiple Regressions. A series of multiple regressions were then performed to determine the contributions of both OLBI subscales (Exhaustion and Disengagement) and SCS in relation to PTSD scores, DASS scores and sickness absence. A simultaneous (forced) entry method was chosen due to lack of previous literature on which to base the order of variables (Field, 2013). Each individual model was also checked for multi-collinearity using the variance inflation factor (VIF).

Ethical Considerations

Given the sensitive nature of the information being sought from participants, a number of ethical considerations were thought out. This was particularly important given that that the online survey methodology in the present study meant that the researcher would not have the opportunity to have face-to-face contact with participants. In light of this, the British Psychological Society (BPS), 'Guidelines for Ethical Practice in Psychological Research Online (BPS, 2007) was consulted in developing an ethical methodology, which was subsequently given formal approval by the University of Essex Research and Ethics Committee (Appendix M).

The use of self-report measures to obtain sensitive information was carefully considered, especially in light of research in military personnel which found that increased awareness of stress related matters may adversely affect morale and occupational functioning (Greenberg, Langston, & Scott, 2006). Whilst it is reasonable to postulate that the same caution applies to police personnel (Watson, 2013), Greenberg et al. (2006) reported that 'a literature search and discussion with experts in the field did not reveal any substantial evidence that filling in questionnaires alone results in significant alteration of a subject's mental state' (pg. 35-5). Despite this, all of the measures included in the survey were discussed with the occupational health managers from the Force. A series of pilot responses were generated on the online survey by fellow researchers and the Force's occupational managers in order to assess suitability.

All participants who completed the online survey were shown an information page containing contact details for the researcher and supervisor. This page also informed participants of what would be expected of them if they chose to take part, data protection and confidentiality, and their right to withdraw from the study at any time. Similarly, a debriefing page was included at the end of the survey. At this point participants were reminded of the confidential nature of the study. They were provided links to external sources of support, should participants have become distressed whilst taking part in the study, or desire further information and support. This was especially important due to the proposed stigma of talking about psychological difficulties within the police force (Evans et al., 2013). The occupational health manager also agreed for their contact details to be specifically provided on this debriefing sheet for participants to contact for additional support, if needed.

In the protection of participants' identities, the information page stated that the employing Force would have no access to individual responses. Participants were required to provide their work email address which provided a way of contacting participants with the link for the follow-up survey in the original study. Only the researcher had access to this identifying information. Once data was transferred from the online survey website, Qualtrics (Qualtrics, 2015), to SPSS, participants were assigned an anonymous identifier. A document which linked participants' email addresses to their anonymous identifier was password protected and kept separately from participants' data. This ensured confidentially of participants when working with supervisors.

Dissemination

The results from this study will be presented in conferences and published in academic journals. The results will also be written up in a thesis which will be held in the library at the University of Essex and electronic repository after successful completion. Finally, feedback to the Force will be provided through a written summary report of this thesis which will be disseminated downwards through the Force's intranet once approved by the Force's Occupational Health department. In presenting outcomes for individual departments, those teams who had minimal respondents were not reported on in isolation due to the increased risk of de-anonymising participants. In these instances, departments were grouped together in the analysis and given the collective term of 'other departments'. The summary report will be sent directly to all participants in the study.

CHAPTER 3

Results

Summary of Chapter

The results are presented in the following order. First, the process of data cleaning and the tests used to assess the distribution of the main outcome variables is presented. These tests were used to determine the use of parametric or non-parametric tests. Second, descriptive statistics of the sample including departmental, socio-demographic and trauma exposure are presented. Third, descriptives for all outcome variables are presented alongside analyses of internal reliability for all predictor and outcome variables. This is followed by a series of multiple regressions which will aim to test the hypotheses presented in the Introduction chapter.

Data Cleaning

Missing Data. As noted from the method chapter, missing data were excluded on a variable by variable basis. Initially, all participants who had not reached the end of the survey were excluded as it was assumed that they had withdrawn their consent. However, participants who reached the end of the survey but failed to complete an entire measure were not excluded from the analysis of other measures. In all cases, measures had less than 20% of missing values. As such, in line with previous recommendations (e.g. Tabachnick & Fidell, 2007, Peng et al., 2006), mean imputation was permissible and the missing values were replaced with the mean of the non-missing responses for that participant on the items within that scale. This method of single imputation was appropriate given the small amounts of missing data that were missing, and has been

found to perform almost equally well as other more sophisticated imputation techniques (Peyre, Leplège, & Coste, 2011).

Detecting Outliers. Data were then examined to determine if any data points were outliers. Outliers were defined by cases with scores considerably different to the rest of the scores, which can bias the mean and inflate the standard deviation (Field, 2013). Firstly, boxplots were used to check for extreme values. Visual inspection indicated two extreme scores on the PCL and DASS. This warranted further investigation and therefore z-scores were calculated and examined in order to statistically identify extreme data points (Field, 2013). Field (2013) suggests that a normal distribution would expect about 5% of data points to have an absolute value greater than 1.96, 1% to have absolute values greater than 2.58 and 0% of absolute values greater than 3.29. Using this criteria there were no significant outliers (z-score > 3.29; Field, 2013). The percentage of z-scores greater than 1.96 ranged between 4.4% and 6.5% for all variables (1.5% more than we would expect), and the percentage of z-scores greater than 2.58 ranged between 0 and 2.2% for the DASS and PCL only. Although the percentage of scores greater than 1.96 and 2.58 were slightly above the recommended guidelines, no scores were deemed to be significant outliers and therefore it was decided to keep all data in the analysis.

Tests of Normality

Normality was evaluated three ways; visually, through inspection of skewness and kurtosis values and through significance tests. Firstly, visual inspection of histograms indicated that both subscales of OLBI (Exhaustion and Disengagement) appeared to be normally distributed. In contrast, PCL and DASS scores appeared positively skewed, and

SCS negatively skewed. Secondly, normality was assessed numerically through calculating kurtosis and skew. Calculation of z-scores and their associated standard error enabled the comparison of skew and kurtosis across measures and indicated whether values significantly differed from 0 (i.e., normal; Field, 2013). The majority of variables had values of skew and kurtosis close to 0 indicating a normal distribution of data. However, the DASS ($z = 3.6$) and PCL ($z = 4.6$) had scores greater than 3.29, indicating a significant difference from normality ($p < .01$) and as such, problems with skew. The positive skewness values indicated scores which are clustered at the lower ends of the scale. The z-values indicated no significant problems with kurtosis for any variable. Lastly, Kolmogorov-Smirnov significance tests were used to see if the variables significantly deviated from a comparable normal distribution with the same mean and standard deviation (Field, 2013). The tests revealed that total SCS scores ($D(92) = .084$, $p = .109$), OLBI Exhaustion subscale ($D(92) = .079$, $p = .2$), and Disengagement subscale ($D(92) = .071$, $p = .2$) did not significantly deviate from normality. However, total PCL scores ($D(90) = .174$, $p = .00$), DASS scores ($D(93) = .141$, $p = .00$), were significantly non-normal ($p > .05$).

Overall these tests of normality indicate that the DASS and PCL have problems with skew and significantly differ from a comparative normal distribution. This being said, the central limit theorem suggests that as sample sizes increase, the less the assumption of normality matters because the distribution will be normal regardless of what the data look like. Therefore, with large sample sizes such as this (n = 93), only a small deviation from normality is required for a significant result, and thus this test alone may erroneously indicate a deviation from normality (Field, 2013). Furthermore, the central limit theorem suggests that in large samples the sampling distribution will be normal regardless of the

shape of the data, as such it is argued that the problems with skew will not make a substantial difference to the analysis (Tabachnick & Fidell, 2007). Field (2013) argued that in large samples, tests of normality can make research worry and change the data (e.g. transform) when it is not needed. As such, parametric analyses were chosen for analysis. However, it was also decided to run analyses using robust methods (e.g. bootstrapping) to check for substantial differences.

Sample Demographics

Characteristics of the sample are summarised in Table 4. The mean age of the police officers was 42 years. The majority of the sample was male, with 34.4% of participants being female. This is slightly higher than the overall proportion of female officers within all police forces in the UK (28.2%; Woods, 2015). Officers had an average of 17 years of experience. Statistics released by four UK police forces indicated that overall women have less years of experience (16 years) at retirement age than men (23.2 years; Police Federation, 2011). Therefore the current sample may reflect what would be expected in terms of average experience of men and women.

Table 4

Sample Demographics

Variable	N (%)	Mean	Median	IQR	SD
Age	92 (98.9%)	41.95	42	26-60	7.6
Years of Employment	93 (100%)	17.2	16	1-37	7.7
Gender					
Female	32 (34.4%)	-	-	-	-
Male	61 (65.6%)	-	-	-	-

Note. IQR = Interquartile Range; SD = Standard Deviation

The number of officers recruited from each of the 12 departments are as follows: 20 (21.5%) contact department (i.e. 911 operators), 15 (16.1%) counter-terrorist unit, 14 (15.1%) criminal investigations, 13 (14%) local policing unit (i.e. 'on the beat' officers), 12 (12.9%) operations unit, 7 (7.5%) forensic science unit, 4 (4.3%) motorway policing unit, 2 (2.2%) public protection unit, 2 (2.2%) criminal justice service, 2 (2.2%) police staff department, 1 (1.1%) intelligence department, and 1 (1.1%) family liaison officer.

Trauma experiences as reported in the LEC are summarised within Table 5. Each trauma was dichotomised into experienced or not experienced for each participant. Events were recorded as experienced by the participant if they chose any of the responses: ‘happened directly to me’, ‘witnessed it’, ‘learned about it’, or as ‘part of the job’ (i.e. taken place within employment). Participants were only able to select one of these options. Events were recorded as not experienced if the participant reported that the event ‘doesn’t apply’, or ‘not sure’. The most frequent trauma type officers had been exposed to was a 'transportation accident' (90.3%), followed by 'physical assault' (88.2%) and 'sudden violent death' (86%).

Table 5

Participant Trauma Experience Reported in Life Events Checklist-Revised

Trauma Type	**Frequency [n (%)]**
Transportation accident	84 (90.3%)
Physical assault	82 (88.2%)
Sudden violent death	80 (86%)
Sudden accidental death	77 (82.8%)
Assault with a weapon	74 (79.6%)

Trauma Type	Frequency [n (%)]
Fire or explosion	67 (72%)
Life-threatening illness or injury	64 (68.8%)
Serious accident	62 (66.7%)
Any other very stressful event or experience	62 (66.7%)
Severe human suffering	51 (54.8%)
Sexual assault	49 (52.7%)
Other unwanted or uncomfortable sexual experience	49 (52.7%)
Exposure to toxic substance	42 (45.2%)
Natural disaster	41 (44.1%)
Serious injury, harm, or death you caused someone	35 (37.6%)
Combat or exposure to a war-zone	29 (31.2%)
Captivity	29 (31.2%)

Data Distributions

Descriptive statistics are provided in Table 6. Means and standard deviations are reported for all variables, with the addition of the median and inter-quartile range for variables with non-normal distributions (PCL, DASS). The median and inter-quartile range have been also been recorded for both OLBI subscales (despite having normal distributions) in order to contribute to the understanding of results within the Discussion chapter. Of note is that the majority of the sample (91.3%) scored within the non-clinical range for PTSD according to clinical cut-offs on the PCL. However, 8.7% of participants scores met criteria for a diagnosis of PTSD.

Table 6

Data Distributions for Predictor and Outcome Variables

Variable (range of scores for scale)	N (%)	Normal		Non Normal	
		Mean	SD	Median	IQR
OLBI[a]					
Exhaustion Subscale (8-40)	92 (98.9%)	24.88	5.63	25	22-29
Disengagement Subscale (8-40)	92 (98.9%)	24.26	5.98	24.5	20-28.8
SCS[b]					
Total Score (20-120)	90 (96.8%)	82.15	18.13	-	-
PCL[c]					
Total Symptom Severity (0-80)	92 (98.9%)	13.20	13.98	7.21	2-21
Total above clinical cut-off	8 (8.7%)	-	-	-	-
Total below clinical cut-off	84 (91.3%)	-	-	-	-
Intrusion Cluster (0-20)	90 (96.8%)	3.33	3.87	2	0-4
Avoidance Cluster (0-8)	90 (96.8%)	1.54	2.04	1	0-2
NACM[d] Cluster (0-28)	90 (96.8%)	4.02	4.99	2	0-7
AAR[e] Cluster (0-24)	90 (96.8%)	4.31	4.85	2	0-6
DASS[f]					
Total Symptom Severity (0-63)	93 (100%)	14.65	9.77	13	8-21
Sickness Absence					
Total Days Absent	62 (66.7%)	2.42	5.08	0	0-3

Note. [a] = Oldenburg Burnout Inventory; [b] = Social Connectedness Scale. [c] = PTSD Checklist; [d] = Negative Alterations in Cognition and Mood, [e] = Alterations in Arousal and Reactivity, [f] = Depression Anxiety Stress Scales. IQR = Inter-Quartile Range; SD = Standard Deviation.

Internal Reliability of Scales

The internal reliability of each scale was determined via Cronbach's alpha (α) as neither the SCS nor OLBI have been used in police populations. Furthermore, the DASS-21, although sparingly used within police samples internationally, has not been applied to UK police populations. Lastly, due to the recent publication of the PCL-5, this too has yet to be applied to UK police populations. All scores exceeded .8 (Table 7) indicating high reliability for all scales and subscales (Field, 2013). However, closer inspection of the correlations between items indicated that for some variables, specific items significantly reduced the internal consistency (i.e. $\alpha < .03$) of the measures. Although a limitation of the measure, it was decided to include all items in the scale and to use it in the way which was intended by the authors, which would also allow comparison between other samples.

Table 7

Internal Reliability of Predictor and Outcome Variables

	Variable	α
OLBI	Exhaustion Subscale	.83
	Disengagement Subscale	.82
PCL	Total Symptom Severity	.95
	Intrusion Cluster	.90
	Avoidance Cluster	.86
	NACM[a] Cluster	.87
	AAR[b] Cluster	.85
DASS	Total Symptom Severity	.93
SCS	Total Score	.95

Note. [a] = Negative Alterations in Cognition and Mood, [b] = Alterations in Arousal and Reactivity

Correlations

A series of bivariate correlations were carried out prior to conducting a planned regression analyses in order to assess for multi-collinearity amongst predictor variables and to check for possible confounding variables. Firstly, Pearson's correlation coefficients were calculated to examine the relationship between all outcome and predictor variables (Table 8). Correlations between predictor variables assessed multi-collinarity. Effect sizes were interpreted using guidelines by Cohen (1988), who recommended that a correlation (r) of .1 indicates a small effect, .3 reflects a medium effect and .5 is indicative of a large effect. The Pearson's correlations indicated that all variables were highly significantly related and had between small to medium effects sizes. This being said, no substantial multi-collinearity (e.g. $r > .9$; Field, 2013) was found between predictors.

Correlations were also carried out between all predictor and outcome variables as a way to determine the magnitude of these relationships without accounting for the contributions of other variables. The variables which were significantly correlated with the largest effect size were DASS total score and the exhaustion subscale on the OBLI ($r = .65$). The PCL symptom cluster of alteration in arousal and reactivity (AAR) significantly correlated with exhaustion ($r = .50$), and social connectedness ($r = -.56$), again with large effect sizes. Of further note, sickness absence, although significantly correlated to all other outcome variables with medium effect size (rs = .30 to .39), was not significantly correlated to any of the predictor variables (i.e. exhaustion, $r = .14$; disengagement, $r = .15$; social connectedness, $r = -.17$).

Lastly, previous research has highlighted the potential role of gender, age and length of service in predicting distress in police populations. As such a series of correlations was

carried out to check for significant relationships between all dependent variables and socio-demographic variables of gender, age and length of service (see Appendix P for table of correlations). Pearson's correlations indicated no substantial (*rs* = -.01 to -.09) or significant correlations ($p > .05$), and as such these demographic variables were not be controlled for in later analyses.

Table 8

Correlations between Outcome and Predictor Variables

	1	2	3	4	5	6	7	8	9
PCL	-	-	-	-	-	-	-	-	-
1. Total Score	-	-	-	-	-	-	-	-	-
2. Intrusion	.845**	-	-	-	-	-	-	-	-
3. Avoidance	.806**	.626**	-	-	-	-	-	-	-
4. NACM [a]	.923**	.662**	.719**	-	-	-	-	-	-
5. AAR [b]	.922**	.695**	.664**	.801**	-	-	-	-	-
DASS	-	-	-	-	-	-	-	-	-
6. Total Score	.478**	.367**	.302**	.390**	.556**	-	-	-	-
Sickness	-	-	-	-	-	-	-	-	-
7. No. of Days	.389**	.301*	.344**	.348**	.367**	.329**	-	-	-
OLBI	-	-	-	-	-	-	-	-	-
8. Exhaustion	.402**	.298**	.280**	.293**	.503**	.646**	.135	-	-
9. Disengage.	.216*	.126	.159	.149	.303**	.341**	.154	.452**	-
SCS	-	-	-	-	-	-	-	-	-
10. Total Score	.454**	-.244*	.276**	.479**	.506**	.355**	.172	.407**	.399**

Note. * $p < .05$, ** $p < .01$. [a] = Negative Alterations in Cognition and Mood, [b] = Alterations in Arousal and Reactivity

Multiple Regressions

All the models discussed within this section achieved a statistically acceptable level of the Variance Inflation Factor (VIF) analysis. In support of earlier correlations, this confirmed that there was no multi-collinearity in any of the models. All models also achieved an acceptable level on the Durbin-Watson test, which confirmed no serial correlations between residuals (Field, 2013). All models used a forced entry method, reflecting the novel research questions which did not predict the order of contribution of each predictor variable. This method has been argued to be the most appropriate method for theory testing because other stepwise methods are influenced by random variation in the data thus lowering the reliability of results (Studenmund & Cassidy, 1987). It is also important to note that due to some deviation from normality of the standardised residuals within all models, all were re-run and bootstrap applied to each model. Bootstrapped analyses will only be presented when it indicated a different outcome. The models will now be discussed individually.

Model 1. Burnout, Social Connectedness and PTSD Symptoms. A multiple regression was performed to test Hypothesis 1 that burnout and social connectedness would predict severity of PTSD symptomatology. R^2 indicated that, taken together, SCS and OLBI subscales of Exhaustion, Disengagement accounted for 26.4% of the variance in the outcome of PCL symptom severity. The adjusted R^2 value estimated how well the model generalises to the population of police officers, outside of the current sample. The adjusted R^2 value (.24) was very close to the value of R^2 indicating that, if applied to the wider population, the model would account for only 2.6% less variance in the outcome

(e.g. shrinkage). ANOVAs indicated that the improvement of the regression model ($F(2, 87) = 10.28$, $p < .01$) in predicting the outcome was significantly better than chance.

Table 9

Linear Model of Predictors of PTSD Symptom Severity

Variable	**B**	**SE**	***β***	***p***
Constant	21,78	12.02	-	.073
Exhaustion	.69	.27	.28	.012*
Disengagement	-.13	.25	-.05	.62
SCS	-.28	.08	-.37	.001**

Note. * $p < .05$, ** $p < .01$

The unique contribution of each predictor was assessed by their associated *b*-value estimate (Table 9). When the other predictor variables are held constant, the *b*-value indicates the degree of change that would be expected in the outcome variable (i.e. PCL severity score) following a single unit change on the predictor in question. The current model indicated that both Exhaustion ($t = 2.57$) and SCS ($t = -3.43$) made significant, unique contributions, whereas Disengagement ($t = -5.01$) did not. The *t* and *p* scores indicated that SCS made a greater contribution to the model, over and above Exhaustion. The standardised β values assess the number of standard deviations that the outcome will change as a result of one standard deviation in the predictor, as they are not dependent on units of measurement they are directly comparable. The standardised β values for Exhaustion ($\beta = .26$), was slightly smaller than for SCS ($\beta = -.35$), which concurs with the respective magnitude of the t-statistics. These results are supported by the predictors' part correlations which assess their unique relationship with the outcome (PCL severity score)

after controlling for the effect of the other predictors (Exhaustion: r = .237, SCS: r = -.317). Taken together, the results partially support the hypothesis that burnout and social connectedness predict PTSD symptom severity. Furthermore, the results suggest that greater levels of social connectedness and lower levels of exhaustion predict lower PTSD symptom severity.

Model 1: Model Bias. Three outliers were identified in the model on the basis of +/-2 SDs from the model. The model sample was 90, therefore it is reasonable to expect about 5% (about 5) of cases to have standardised residuals outside of these limits. Therefore, three outliers is within the limits of what we would expect. In addition to this, it is expected that 99% of cases should lie within +/- 2.5 SDs so we would expect only 1% (n = 1) of cases to lie outside of this. Two outliers lie outside of these limits, which is one more than we would expect for an accurate model. Despite this, a case summary report indicated that none of the outliers had a Cook's distance value greater than 1, meaning they did not having an undue influence on the model. Additionally, average leverage was assessed to measure the influence of the observed values on the PCL over the predicted values. Using Stevens (2002) recommendations, only 1 score was three times as large (.098). Despite this, the present findings should be interpreted with caution given that the standardised residuals of the model were not normally distributed.

Model 2. Burnout, Social Connectedness and Intrusion Symptoms. A multiple regression was performed as part of the exploratory research to investigate whether burnout and social connectedness predict overall Intrusion symptoms on the PCL. R^2 indicated that Exhaustion, Disengagement and SCS accounted for only 10.9% of the variance in the model. The adjusted R^2 value was fairly close to the value of R^2

(adjusted R^2 = .08) indicating that, if applied to the wider population, the model would account for 3.1% less variance in the outcome (e.g. shrinkage). An ANOVA indicated that the improvement of the regression model ($F(3, 86) = 3.49$, $p = .02$) in predicting the outcome was significantly better than chance. The unique contribution of each predictor was assessed by their *b*-value estimate (Table 10). The current model indicates that only Exhaustion ($t = 2.16$) made a significant contribution, whereas Disengagement ($t = -.45$) and SCS ($t = -1.38$) did not. Taken together, this model suggests that higher levels of exhaustion predict greater symptoms of intrusion.

Table 10

Linear Model of Predictors of Intrusion Symptoms

Variable	**B**	**SE**	***β***	***p***
Constant	2.55	3.66	-	.49
Exhaustion	.18	.08	.26	.03*
Disengagement	-.03	.08	-.05	.65
SCS	-.03	.02	-.16	.17

Note. * p < .05, ** p < .01

Model 2: Model Bias. Four outliers were identified in the model on the basis of +/-2 SDs from the model. All the outliers lie outside of these limits, which is three more than we would expect for an accurate model. Further investigation of these outliers using a case summary report indicated that none had a Cook's distance value greater than 1, meaning they did not having an undue influence on the model. Additionally, average leverage was assessed to measure the influence of the observed value of overall intrusive

symptoms compared to the predicted values. Using Stevens (2002) recommendations, no scores was three times as large (.13), indicating no significant problems with the outliers.

Model 3. Burnout, Social Connectedness and Avoidance Symptoms. A multiple regression was performed as part of the exploratory research to investigate whether burnout and social connectedness predict overall Avoidance symptoms on the PCL. R^2 indicated that Exhaustion, Disengagement and SCS accounted for only 11% of the variance in the model. Once again, the adjusted R^2 value was fairly close to the value of R^2 (adjusted R^2 = .08) indicating that, if applied to the wider population, the model would account for 3% less variance in the outcome (e.g. shrinkage). ANOVAs indicated that the improvement of the regression model ($F(3, 86) = 3.53$, $p = .02$) in predicting the outcome was significantly better than chance. The unique contribution of each predictor was assessed by their *b*-value estimate (Table 11). The current model indicated that there is some evidence that the individual predictor variables made a significant contribution to the overall model predicting total avoidance symptoms (Exhaustion: $t = 1.72$, Disengagement: $t = -.12$, SCS: $t = -1.70$) given that $p = .09$.

Table 11

Linear Model of Predictors of Avoidance Symptoms

Variable	**B**	**SE**	***β***	***p***
Constant	1.61	1.93	-	.41
Exhaustion	.07	.04	.21	.09
Disengagement	-.004	.04	-.01	.91
SCS	-.02	.01	-.20	.09

Note. * $p < .05$, ** $p < .01$

Model 3: Model Bias. Six outliers were identified in the model on the basis of +/-2 SDs from the model. The model sample was 90, therefore it is reasonable to expect about 5% (about 5) of cases to have standardised residuals outside of these limits. Therefore, six outliers is one outside the limits of what we would expect. In addition to this, it is expected that 99% of cases should like within +/- 2.5 SDs so we would expect only 1% (about 1) of cases to lie outside of this. Four of the outliers lie outside of these limits, which is three more than we would expect for an accurate model. Further investigation of these outliers using a case summary report indicated that none had a Cook's distance value greater than 1, meaning they did not having an undue influence on the model. Additionally, average leverage was assessed to measure the influence of the observed value of overall avoidance symptoms compared to the predicted values. Using Stevens (2002) recommendations, no scores was three times as large (.13), indicating no significant problems with the outliers.

Model 4. Burnout, Social Connectedness and Negative Alterations in Cognition and Mood. A multiple regression was performed as part of the exploratory research to investigate whether burnout and social connectedness predict symptoms of Negative Alterations in Cognition and Mood. R^2 indicated that Exhaustion, Disengagement and SCS accounted for 24.8% of the variance in the model. The adjusted R^2 value was fairly close to the value of R^2 (adjusted $R^2 = .22$) indicating that, if applied to the wider population, the model would account for 2.6% less variance in the outcome (e.g. shrinkage). An ANOVA indicated that the improvement of the regression model ($F(3, 86) = 9.48$, $p < .01$ in predicting the outcome was significantly better than chance. The unique contribution of each predictor was assessed by their *b*-value estimate (Table

12). The current model indicated that only SCS (t = -4.31) made a significant contribution to the overall model predicting Negative Alterations in Cognition and Mood, whereas Exhaustion (t = 1.38) and Disengagement (t = -.95) did not. This model suggests that greater levels of social connectedness predict lower levels of Negative Alterations in Cognition and Mood.

Table 12

Linear Model of Predictors of Negative Alterations in Cognitions and Mood

Variable	**B**	**SE**	***β***	***p***
Constant	13.03	4.33	-	.00
Exhaustion	.13	.10	.15	.17
Disengagement	-.09	.09	-.10	.35
SCS	-.13	.03	-.46	.00**

Note. * p < .05, ** p < .001

Model 4: Model Bias. Six outliers were identified in the model on the basis of +/-2 SDs from the model. The model sample was 90, therefore it is reasonable to expect about 5% (about 5) of cases to have standardised residuals outside of these limits. Therefore, six outliers is one outside the limits of what we would expect. In addition to this, it is expected that 99% of cases should like within +/- 2.5 SDs so we would expect only 1% (about 1) of cases to lie outside of this. Three of the outliers lie outside of these limits, which is two more than we would expect for an accurate model. Further investigation of these outliers using a case summary report indicated that none had a Cook's distance value greater than 1, meaning they did not having an undue influence on the model. Additionally, average leverage was assessed to measure the influence of the

observed values of the dependent variable (negative alterations in cognition and mood) compared to the predicted values. Using Stevens (2002) recommendations, no scores was three times as large (.13), indicating no significant problems with the outliers.

Model 5. Burnout, Social Connectedness and Alterations in Arousal and Reactivity. A final multiple regression was performed as part of the exploratory research to investigate whether burnout and social connectedness predict alterations in arousal and reactivity. R^2 indicated that Exhaustion, Disengagement and SCS accounted for over a third (R^2 = 36%) of the variance in the model. The adjusted R^2 value was close to the value of R^2 (adjusted R^2 = .34) indicating that, if applied to the wider population, the model would account for only 2.2% less variance in the outcome (e.g. shrinkage). An ANOVA indicated that the improvement of the regression model ($F(3, 86) = 16.12$, $p < .01$) in predicting the outcome was significantly better than chance.

Table 13

Linear Model of Predictors of Alterations in Arousal and Reactivity

Variable	**B**	**SE**	***β***	***p***
Constant	4.59	3.89	-	.24
Exhaustion	.30	.09	.36	.001**
Disengagement	-.001	.08	-.001	.99
SCS	-.10	.03	-.36	.000**

Note. * $p < .05$, ** $p < .001$

The unique contribution of each predictor was assessed by their *b*-value estimate (Table 13). The current model indicates that both Exhaustion (t = 3.52) and SCS (t = -3.67)

made significant contributions, whereas Disengagement (t = -.01) did not. The t and p scores indicated that SCS was making a greater contribution to model, over and above that of Exhaustion. The standardised β values for Exhaustion (β = .355), was slightly smaller than for SCS (β = -.360), which concurs with that the respective magnitude of the t-statistics. These results are also supported by the predictors' 'part correlations' which assess their unique relationship with the outcome (PCL severity score) after controlling for the effect of the other predictors (Exhaustion: r = .503, SCS: r = -.506). These results indicate that higher levels of exhaustion and lower levels of social connectedness predict higher levels of Alterations in Reactivity and Arousal.

Model 5: Model Bias. Two outliers were identified in the model on the basis of +/-2 SDs from the model. The model sample was 90, therefore it is reasonable to expect about 5% (about 5) of cases to have standardised residuals outside of these limits. Two outliers is therefore within limits of what we would expect. In addition to this, it is expected that 99% of cases should like within +/- 2.5 SDs so we would expect only 1% (about 1) of cases to lie outside of this. Both of the outliers lie outside of these limits, which is one more than we would expect for an accurate model. Further investigation of these outliers using a case summary report indicated that none had a Cook's distance value greater than 1, meaning they did not having an undue influence on the model. Additionally, average leverage was assessed to measure the influence of the observed values of the dependent variable (negative alterations in cognition and mood) compared to the predicted values. Using Stevens (2002) recommendations, no scores was three times as large (.13), indicating no significant problems with the outliers.

Model 6. Burnout, Social Connectedness and General Distress. The sixth multiple regression was performed to investigate whether burnout and social connectedness predicted distress. This model tests Hypothesis 2 that lower levels of burnout and higher levels of social connectedness would predict lower levels of distress. R^2 indicated that Exhaustion, Disengagement and SCS together accounted for 42.8% of the variance in the model. The value of adjusted R^2 (.408) was close to the value of R^2 indicating that, if applied to the wider population, the model would account for 2% less variance in the outcome (e.g. shrinkage). ANOVAs indicated that the improvement of the regression model ($F(2, 89) = 21.94$, $p = .00$) in predicting the outcome was significantly better than chance.

Table 14

Linear Model of Predictors of DASS Total Severity Score

Variable	**B**	**SE**	***β***	***p***
Constant	-7.68	7.29	-	.296
Exhaustion	1.01	.16	.59	.00**
Disengagement	.05	.15	.03	.723
SCS	-.054	.049	-.10	.269

Note. * $p < .05$, ** $p < .01$

The unique contribution of each predictor was assessed by their *b*-value estimates (Table 14). The current model indicated that while Exhaustion ($t = 6.26$) made a significant contribution, SCS ($t = -1.11$) and Disengagement ($t = .36$) did not. The standardised β values for Exhaustion ($\beta = .59$), was greater than SCS ($\beta = -.10$) and Disengagement ($\beta = .03$), which concurs with that the respective magnitude of the t-statistics. These results

are also supported by the predictors' part correlations which assess their unique relationship with the outcome (DASS severity score) after controlling for the effect of the other predictors (Exhaustion: r = .51, Disengagement: r = .29, SCS: r = -.09).

Model 6: Model Bias. Once again, three outliers were identified in the model on the basis of +/-2 SDs from the model. The model sample was 92, therefore it is reasonable to expect about 5% (about 5) of cases to have standardised residuals outside of these limits. Therefore, 3 outliers is within the limits of what we would expect. In addition to this, it is expected that 99% of cases should like within +/- 2.5 SDs so we would expect only 1% (about 1) of cases to lie outside of this. All three outliers lie outside of these limits, which is two more than we would expect for an accurate model. Despite this, a case summary report indicated that none of the outliers had a Cook's distance value greater than 1, meaning they did not having an undue influence on the model. Additionally, average leverage was assessed to measure the influence of the observed value of the outcome variable over the predicted values. Using Stevens (2002) recommendations, only 1 score was three times as large (.098).

Model 7: Burnout, Social Connectedness and Sickness Absence. A multiple regression was performed to test Hypothesis 3 that higher levels of burnout and lower levels of social connectedness would predict increased rates of sickness absence. In total, 61 participants responded to the question, 'in the last two months how many days have you taken off sick?'. Of the 61 participants, 37 reported having at least 1 day off in the last 2 months. Initial visual inspection of the sickness absence data showed a significant non-normal distribution. As such it was decided to use the robust method of bootstrapping. Bootstrapping estimates the properties of the sampling distribution from

the sample data (Field, 2013). In effect, the sample data are treated as a population from which smaller samples are taken.

R^2 indicated that Exhaustion, Disengagement and SCS accounted for only 4.2% of the variance in the model. The adjusted R^2 value estimated how well the model generalises to the population of police officers, rather than a sample. The value of R^2 was -.01, indicating that, if applied to the wider population, the model would not predict any variance in the outcome. In this way, the R^2 suggested that the model does not fit the data. It is not surprising that ANOVAs indicated that the improvement of the regression model ($F(3, 57) = .83$, $p > .05$) in predicting the outcome was not significantly better than chance. The unique contribution of each predictor was assessed by their *b*-value estimates (Table 15), the current model indicated that none of the predictor variables made a significant contribution to the model predicting the sickness absence (Exhaustion, $t = .45$: Disengagement, $t = .59$: SCS, $t = -.81$).

Table 15

Linear Model of Predictors of Sickness Absence

Variable	**B**	**SE**	***β***	***p***
Constant	2.06	6.38	-	.75
Exhaustion	.06	.14	.06	.66
Disengagement	.07	.13	.09	.56
SCS	-.06	.04	-.12	.42

Summary of Results

PTSD and Individual Symptom Clusters. Table 16 contains a summary of β scores from each model, and highlights the significant relationship. Model 1 partially supported Hypothesis 1, in that lower levels of social connectedness and higher levels of exhaustion significantly predicted higher levels of PTSD symptom severity. There are considerable differences between their contributions to predicting scores for individual symptom clusters. At this point it is important to note that Disengagement did not make a significant contribution to any of the models predicting PCL scores and the possible reasons for this will be outlined in the Discussion. Exhaustion made a significant contribution to the models predicting PCL total symptom severity, but also in predicting the symptom clusters of intrusion and alterations in arousal and reactivity. SCS also made a significant contribution to the PCL total symptom severity and two of the four symptom clusters, alterations in arousal and reactivity, and negative alterations in mood and cognition.

Table 16

Summary of Standardised β scores from Models 1 to 5.

	Model				
	1	**2**	**3**	**4**	**5**
Exhaustion	.28*	.03*	.21	.15	.36**
Disengagement	-.05	-.05	-.01	-.10	-.001
SCS	-.37**	.17	-.20	-.46**	-.36**

Note. * $p < .05$, ** $p < .01$. Model DVs; 1 = Total PCL Symptom Severity, 2 = Intrusion Symptoms, 3 = Avoidance Symptoms, 4 = Negative Alterations in Mood and Cognition, 5 = Alterations in Arousal and Reactivity.

Total Distress and Sickness Absence. Table 17 contains a summary of β scores from the final two models, and highlights the significant relationship. The results for Model 6 partially supported Hypothesis 2 in that exhaustion (but not disengagement or social connectedness) significantly predicted overall distress, contributing 42.8% of unique variance in distress. Disengagement and SCS did not make a significant unique contribution. The results for Model 7 do not support Hypothesis 3 in that neither subscales of burnout or social connectedness made a significant contribution to variation in sickness absence. Additionally, the small R^2 adjusted R^2 values suggest that the model is not a good fit for the data and cannot be generalised to the wider police population.

Table 17

Summary of Standardised β scores from Models 6 and 7.

	Model	
	6	**7**
Exhaustion	.59**	.06
Disengagement	.03	.09
SCS	-.10	-.12

Note. * $p < .05$, ** $p < .01$. Model DVs; 6 = Total DASS Score, 7 = Sickness Absence.

CHAPTER 4

Discussion

Summary of Project

It has been acknowledged that exposure to stressful and potentially traumatic events can leave police officers vulnerable to developing a range of psychological difficulties, particularly Post Traumatic Stress Disorder (PTSD). A current challenge facing the UK Police Force is to identify risk and protective factors which contribute to the development of PTSD and other types of psychological distress. Two factors which this study identified as potentially significant were burnout and social connectedness. Firstly, given the recent changes to the UK Police Force including budget cuts, increased pressures regarding counter-terrorism and ever increasing levels of paperwork, it could be argued that officers are at an increased risk of burnout (exhaustion and disengagement) as a result of cumulative organisational and operational stress. Secondly, the lack of social connectedness, which captures the internal experience of feeling connected to others and the world around, was also hypothesised to be important in the development of officer distress. To explore the predictive value of both these factors on PTSD and broader psychological distress, an online study captured officers' self-reported symptoms on a range of measures. A cross-sectional, multiple regression analysis found that the findings partially supported the hypotheses; exhaustion (not disengagement) and social connectedness predicted PTSD symptomology, whilst only exhaustion predicted symptoms of general distress. Neither burnout nor social connectedness predicted sickness absence. These findings will now be discussed in more detail in relation to each original hypothesis.

Summary of Findings in Relation to Hypotheses

Hypothesis 1. Burnout and Social Connectedness will predict PTSD symptom severity. This hypothesis was partially supported: exhaustion significantly contributed to predicting PTSD symptom severity, whereas disengagement did not. Additionally, social connectedness made a significant and greater contribution to PTSD symptom severity, over and above exhaustion.

Firstly, it was hypothesised that greater levels of burnout would predict greater PTSD symptoms due to the depletion of resources and the subsequent inability to manage future stress (Hobfoll, 2001). A multiple regression indicated that increased scores on the exhaustion (but not disengagement) subscale were predictive of increased total PTSD symptom severity. To return to the definition of the burnout subscales, Demerouti, Bakker, Nachreiner and Schaufeli (2001) defined exhaustion as a consequence of intensive physical, affective and cognitive strain, and disengagement as distancing oneself from ones work in general (Demerouti et al., 2001). Previous research which has applied the Job Demands-Resources model (JD-R; Demerouti et al., 2001) to burnout found that exhaustion was positively related to job demands, whereas disengagement was positively related to job resources (Demerouti et al., 2001). Application of this model to the current findings would suggest that job demands, rather than job resources predict PTSD symptom severity, contradicting COR theory that it is the loss of resources which predicts ones' ability to successfully manage future stress. However, research has been inconsistent as Schaufeli and Bakker (2004) found that exhaustion was related to both job demands and resources. This may partly be explained by the findings of Bakker, Demerouti, and Euwema, (2005) whose results indicated that the combination of high

demands and low job resources significantly adds to predicting the two dimensions of burnout.

Such findings may suggest that the original JD-R model of burnout draws an arbitrary distinction between the two subscales and that the interaction between demands and resources is also important. In light of this, the current findings may indicate that exhaustion represents a facet of burnout that involves both high job demands and as such, significant resource investment and loss. Conversely, studies have also suggested that employees with high levels of personal resources can deal more effectively with demands, thus creating a buffer against potential negative psychological consequences (e.g., exhaustion; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). This suggestion draws on both COR theory (Hobfoll, 2001) and the JD-R model (Bakker et al., 2005), as it recognises the potential role of both personal and job related resources. Given the non-significant relationship between disengagement and distress, it may be that personal, not job resources are the most important aspect of an officers' ability to manage job demands and prevent further distress, however this relationship can only be hypothesised.

Further exploratory analyses found that exhaustion significantly predicted scores on two of the four PTSD symptom clusters: intrusion and alterations in arousal and reactivity. Interestingly, both of these clusters represent physical responses to stress, for example intrusion symptoms include 'having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)', whereas symptoms of arousal and reactivity include 'feeling jumpy or easily startled', and 'trouble falling or staying asleep'. Given that the symptoms captured within the exhaustion subscale reflect both emotional and physical exhaustion, they may not be

too dissimilar in the focus of symptom measurement. To some degree this may explain the significant relationship between the two, however COR theory also posits that it is possible that exhaustion may lead to exacerbated symptoms of intrusion and arousal due to a loss of individual resources to be able to consciously inhibit distressing thoughts and feelings associated with symptoms of intrusion and arousal.

Conversely, it may be theorised that symptoms of intrusion and arousal lead to exhaustion. Although this was not found within the current study, this hypothesised relationship may partly support previous research which has found that symptoms of hyper-arousal are a strong prospective predictor of other components of the post-traumatic response (Schell, Marshall, & Jaycox, 2004). Longitudinal trajectory analysis found that individuals with greater symptoms of hyper-arousal (compared to other symptom clusters) showed lower overall symptom improvement relative to others with fewer symptoms of hyper-arousal (Schell et al., 2004). Even in the absence of full PTSD, individuals who experience hyper-arousal symptoms in response to trauma have been speculated to have a constellation of other problems including depression and chronic distress (Freeman, Psyd, Moore, Abpp, & Freeman, 2009). Given that depression has been argued to have significant overlap with burnout (Glass & McKnight, 1996), it is plausible the current findings lend support for the reciprocal relationship between PTSD and exhaustion.

Secondly, it was hypothesised that greater levels of social connectedness would be predictive of lower PTSD symptoms in officers. The same multiple regression analysis indicated that social connectedness made a significant contribution to the model predicting PTSD symptom severity, greater than that of exhaustion. Furthermore, the

exploratory analysis indicated that social connectedness significantly contributed to two of the four symptom clusters: negative alterations in mood and cognition, and alterations in arousal and reactivity. These relationships may be partly explained by the similarities in symptomatology between each cluster and social connectedness. For example, negative alterations in cognition and mood include 'feeling distant or cut off from other people', and a 'loss of interest in activities that you used to enjoy'. Additionally, alterations in arousal and reactivity include, 'being super-alert or watchful or on guard' and 'having difficulty concentrating'. It is possible that both these symptom clusters capture an individual's disconnection from the world around them. However, returning to the theories underlying social connectedness may also help explain the current findings.

Lee and Robbins (1998) characterised social connectedness as a type of relational schema or a 'cognitive structure representing regularities in patterns of interpersonal relatedness' (Baldwin, 1992, p.461). As such, social connectedness may operate as a social lens with which to view and interact with the world (Lee & Robbins, 1998). This view may suggest that individuals who have low social connectedness develop PTSD in response to a traumatic experience through the self-perpetuation of negative social appraisals by seeking out confirmatory information in the social world (Lee & Robbins, 1998), in part, to avoid the discomfort of cognitive dissonance (Festinger, 1962). From a developmental perspective, if an individual has developed a stable sense of connectedness in childhood, they may be adequately able to maintain their self-esteem and personal relationships in the face of trauma or stressors and as such be protected against the negative consequences captured within PTSD symptoms (Lee & Robbins, 1995).

In light of the findings, COR theory may argue that social connectedness represents an important personal resource for police officers. From the initial development of COR theory, Hobfoll (1990) argued that social support has the potential to both widen one's pool of available resources and can replace or reinforce other resources that have been lacking. As such, a number of inter-personal factors were included within a comprehensive list of resources (Hobfoll, 2001). Some of these factors represent practical elements of social support such as: 'support from co-workers' and 'help with tasks at home'. However it may be argued that some of the other resources reflect a more internal experience of connection and thus may capture aspects of social connectedness, including: 'understanding from my employer/boss', 'intimacy with spouse or partner', and 'good relationship with my children'. Applied to the current results (and thus maintaining a focus on work-related factors), officers who feel socially disconnected, may struggle to manage symptoms of PTSD because they may not experience an opportunity for acknowledgement of formal or informal support which has been shown to have a significant impact on the development of PTSD post-trauma (Stephens & Long, 2000).

In summary, both exhaustion and social connectedness made a significant contribution to predicting overall PTSD symptom severity (and some individual symptom clusters), however we are not able to assume causal relationships. Firstly, the results suggest that exhaustion may deplete one's ability to manage the demands of additional traumatic experiences, potentially due to an increase in job demands and a potential loss of personal resources, although the reverse may also be true. Secondly, social connectedness made a significant contribution to predicting symptoms of PTSD, greater than exhaustion. As such, social connectedness may potentially buffer the development of PTSD through widening the pool of individual resources to support the successful management of future

stress and trauma. These results may lend support for previous research which has suggested that social connectedness which is developed early in life may impact on how an individual sees, and manages in the social world (Lee & Robbins, 1995). Conversely, the results may also suggest that PTSD may lead to lower levels of social connectedness which would support previous research (Snell, Surgenor, Dorahy, & Hay-Smith, 2014), however this conclusion cannot be drawn from the current findings

Lastly, the results also indicated that disengagement from work did not predict officer PTSD symptom severity or any individual symptom cluster. Examination of disengagement scores suggest that this relationship was not due to limited variability in scores as scores within the disengagement subscale similarly reflected those on the exhaustion subscale. In some ways it was surprising that disengagement was not a significant contributor, as theoretically it may share similarities with social connectedness. The bivariate correlations indicated a significant relationship between disengagement and social connectedness, however with only a small to medium effect size. This may mean that when included in the current model, the variance in PTSD was accounted for by social connectedness and not disengagement. To explain this, it could be hypothesised that social connectedness captures a much broader experience of internal connectedness (e.g. connectedness at work and non-work) as opposed to disengagement which only captures engagement to the workplace. As such, the results may suggest that what is important is a sense of internal connectedness to more than just ones job.

Hypothesis 2. Burnout and Social Connectedness will predict Psychological Distress. This hypothesis was partially supported: exhaustion significantly contributed

to the model predicting general distress, whereas disengagement and social connectedness did not.

Firstly, it was hypothesised that higher levels of burnout would predict higher scores of general distress. A multiple regression indicated that exhaustion made a significant contribution to the model predicting total distress scores (as defined by the composite score of the DASS subscales depression, anxiety and stress), accounting for 43% of the variance in total distress. Similar to its relationship to PTSD, exhaustion may represent significant resource investment in response to job demands, resulting in the broad depletion of one's resources (Hobfoll, 2001). This is in line with the predictions of COR theory that individuals who lack resources may experience further cycles of resource loss which may hinder an individual's to manage future stressors (Hobfoll, 2001).

The large proportion of variance accounted for by exhaustion also raises questions as to the relationship between burnout and distress as measured by the DASS. At this point it is important to note that only the DASS total score was used in the analysis and the relationship between burnout and individual subscales have not been presented in this study as the main outcome of focus concerns PTSD. At first glance, aspects of burnout share similarities with symptoms of depression. In particular, exhaustion could be argued to overlap with fatigue and loss of energy in depression in terms of physical symptoms, and with depressed mood in relation to emotion-focused symptoms. Whilst some authors have argued for burnout and depression as distinct constructs (Iacovides, Fountoulakis, Kaprinis, & Kaprinis, 2003), others have commented on their similarities. Bianchi, Boffy, Hingray, Truchot, and Laurent (2013) found overlap for eight of the nine major depressive episode diagnostic criteria of the DSM-IV (APA, 2000) and thus proposed that

burnout encompasses a prominent depressive core and that burnout and depression might actually match the same pathological realm (Hallsten, 1993). This being said, Bianchi et al., (2013) used strict cut-offs for the assessment of burnout, raising the question of the validity of comparing the diagnostic category of depression to a non-clinical construct of burnout.

These current results support a recent review which found that among the three most studied components of burnout, emotional exhaustion (on the MBI) showed the strongest link to depression with moderate to high correlations (Bianchi, Schonfeld, & Laurent, 2015). In addition to overlapping symtomatology, Glass and McKnight (1996) proposed that rather than impacting on each other, burnout and depressive symptoms may co-develop alongside each other. It could also be argued that symptoms of stress within the DASS form a core facet of burnout. That is, burnout can be defined as a accumulation of stress which is unmanaged and treated (Maslach & Jackson, 1984). It may be that exhaustion and general distress have similar developmental trajectories or have a degree of reciprocity. However, Warr (1987) highlighted that whilst burnout relates to a specific job, depression (and distress more generally) are context-free. Applied to the current findings, exhaustion may lead to greater levels of distress more broadly, however context-free distress may also increase the risk of exhaustion within ones jobs.

Secondly, it was hypothesised that high levels of social connectedness would be predictive of fewer symptoms of distress. A multiple regression indicated that social connectedness did not make a significant contribution to the outcome of distress. This is surprising given the wealth of research to suggest the positive impact of social support in depression and anxiety. The lack of a significant relationship may again be explained by

particular items, in this case, those relevant to anxiety. Previous literature found that social connectedness does not have an effect on state anxiety, but rather it is connected to trait anxiety (Lee & Robbins, 1998). Given that the DASS asks participants to report on symptoms over the past two weeks, this measure may not capture the broader impact of social connectedness on an individual's trait anxiety. This being said, the different relationship between social connectedness and state and trait anxiety was found in a sample of female college students. Whilst there were no gender differences found in levels of social connectedness within the current study, previous research has been inconsistent in its findings (Lee & Robbins, 1998). Therefore, given that the current sample is more than half male, caution may have to be applied when generalising such findings to the present study.

Hypothesis 3. Burnout and Social Connectedness predicts Sickness Absence. This hypothesis was not supported. Neither subscales of burnout or social connectedness significantly predicted rates of sickness absence.

A multiple regression indicated that none of the predictor variables made a significant contribution to the model predicting sickness absence. These findings are in contrast to much of the literature which suggests that absenteeism is highly relevant in police work and significantly related to burnout. There are a number of reasons why the current study did not find a significant relationship. One suggestion may be that the measurement of both burnout and sickness absence are too narrow in their focus. Firstly, although research has suggested that burnout predicts sickness absence, there are a number of other factors which may contribute to an officer's decision to be absent from work. The non-significant relationship may reflect Summerfield's (2011) suggestion that many studies

which explore sickness absence do not fully capture the stress of the individual, thus mistakenly attributing absence to a particular aspect (e.g. burnout), rather than looking more broadly at contributing factors (e.g. family strain).

Individual factors such as high levels of officer commitment may lead to the decision to ignore symptoms of physical or psychological illness, and come to work when others would have stayed at home to recover (i.e. 'sickness presenteeism'; Leineweber et al., 2011). Beliefs held by individuals that they are capable of coping with demands, may moderate the relationship between burnout and sickness absence. A study by Berg, Hem, Lau, & Ekeberg (2006) suggested that officers may translate experiences of stress into self-reports of burnout, but rather into physical complaints. Taken together, the non-significant relationship between burnout and sickness absence may be explained by other factors such as officer hardiness or coping style, or that sickness absence as a measure of occupational functioning is too narrow and does not capture the officers who are present at work but report a number of health complaints. However, given that the current study did not include measures of individual coping, or subjective health problems, this explanation can only be hypothesised.

Summary of Findings. The results indicated that exhaustion, but not disengagement was a significant predictor of both PTSD symptoms and overall distress. These results are in line with the predictions of COR theory, that individuals who lack resources are most likely to experience cycles of resource loss which may lead to chronic depletion of emotional, cognitive and physical energy, hindering one's ability to manage future stressors or critical incidents. Social connectedness was also found to be a significant predictor of only PTSD symptom severity, but not overall distress. However

the results may also suggest that PTSD and distress more broadly predict levels of exhaustion within one's job. In an attempt to understand why exhaustion, but not disengagement was a significant predictor of PTSD and distress, we may look at its theoretical relationship with social connectedness. Theoretically, it follows that if an individual is highly socially connected, that individual would be less likely to pull away from others and disengagement would be less likely. One explanation as to why social connectedness, but not disengagement predicted PTSD symptom severity may be that social connectedness captures an individual's connectedness to peers, family and the world in general more broadly in comparison to only connectedness to work.

As mentioned, social connectedness was found to be a significant predictor of only PTSD symptom severity, but not distress. One explanation for this difference is the social and inter-personal nature of many of the critical incidents police officers experiences (e.g. murder, assault), which is reflective of a more 'complex' PTSD presentation rather than the more common PTSD which often occurs in response to a singular traumatic event (Herman, 1992). This also lends support for Papazoglou's (2013) concept of Police Complex Spiral Trauma (PCST) that describes the negative effects of officers' mental and physical health accumulated over the course of their career, to critical incidents that vary in tension, frequency, and unpredictability. Symptoms of complex trauma include disturbances in relational capacities, alterations in attention and consciousness and adversely affected belief systems (Herman, 1992). In relation to the current findings, high levels of social connectedness may buffer against the negative effects of repeated social and inter-personal incidents. This has been supported by research in non-police samples which has indicated a significant relationship between complex trauma and

feeling emotionally disconnected from family and friends (i.e., interpersonal disconnectedness; Dorahy et al., 2009).

Lastly, neither burnout nor social connectedness significantly predicted rates of sickness absence. This result contrasts previous literature and this study's hypothesis. In part this may have been due to the measurement of sickness absence being too narrow, not capturing the experience of those officers who are present at work but report a number of health complaints. Additional explanations were also generated including the potential mediating role of other factors such as officer hardiness or coping style in the relationship between burnout and sickness absence.

Critique of the Study

A major limitation of this research is that it utilised a cross-sectional design. In using this design it was not possible to assess change over time which would have been helpful for two main reasons. Firstly, the design did not allow for an exploration of the possible reciprocal relationship between the predictor variables (social connectedness and burnout) and PTSD and distress. This would be important as according to the COR theory (Hobfoll, 2001), PTSD may also deplete an individual's available resources, thus decreasing the ability to manage future stressors and increasing the risk of developing burnout. Similarly, although this study assigned social connectedness as the predictor variable, research has also suggested the negative impact of trauma on an individual's social connectedness (Snell et al., 2014), thus social connectedness may also represent a dependent variable. Secondly, the cross-sectional design meant that the study is not able to draw conclusions as to the stability of constructs. In particular, there is some debate

about the ability of interventions to impact on social connectedness in light of its' conceptualisation as an early developmental process (Lee & Robbins, 1998). In this way, the current study is somewhat limited in its understanding of the relationships between variables and as such will use caution when making recommendations for clinical practice later in this chapter.

At this point it is important to note that all participants initially gave consent to take part in the original, longitudinal study. Research has often acknowledged the challenges faced in the recruitment of police officers, given their reluctance to seek support or treatment despite their increased risk of developing mental health problems and burnout (Berg et al., 2006; Mikkelsen & Burke, 2004). This was highlighted in a survey by Asen and Colon (1995) of 82 police officers in New Jersey which found that 70.7% of officers knew about their workplace employee assistance programs, however only 22% had ever utilised them. In part this reluctance may be due to increased levels self-reliance and masculine norms which have traditionally been associated with the profession (Langston et al., 2010). Given the increasing demands placed on police officers, the willingness of so many officers to consent to taking part in the original longitudinal survey demonstrates the importance of research into officer distress to officers currently in the field. It could be hypothesised that the sample encompassed a group of highly motivated officers.

Self-selection biases may be a further limitation of the current study. The PCL was significantly positively skewed, containing very few high scores, with only 8 (8.7%) falling above the clinical cut-off. Although this figure reflects some estimations of PTSD prevalence within police populations (Carlier, Lamberts, & Gersons, 1997), it is important to also acknowledge that 53.5% of participants started, but did not finish the survey.

Whist the online survey design did not allow for any data to be captured on the reasons for participant drop-out, it could be hypothesised that individuals with higher PTSD symptomatology may have avoided taking part or completing the questionnaire (avoidance being a specific symptom cluster within PTSD diagnostic criteria). Thus those with higher PTSD symptomatology may be unrepresented within this sample and 8.7% might not reflect the 'true' presence of PTSD within this police force. Conversely, it may be also hypothesised that the sample may contain officers who have experienced significant trauma and subsequent PTSD symptoms but who are motivated share their experience.

In an attempt to counteract the stigma associated with experiencing distress, a self-report method was used. However, given that it was anticipated that this population may be reluctant to admitting symptoms of distress in light of police culture and associated stigma, it is possible that officers underreported their symptoms for fear of being identified as ‘unwell’. By using the term 'PTSD', certain officers may have been dissuaded to participate, possibly not relating to this terminology, or defining their experiences as 'just part of the job'. In an attempt to reduce the potential stigma, participants were informed that their responses would remain anonymous and would not be shared with their colleagues or managers. Given that for, the original study, participants were asked to provide their email address in order to be contacted again for the follow-up; this may have put off prospective participants through the risk of de-anonymisation. However, other research methods such as face-to-face interviews could have reduced the number of participants willing to engage in the research as a result of the same desire to conceal difficulties.

It is also important to consider the generalisability of these results to the wider police population. Firstly, it is important to note that the current sample size assured that the study was sufficiently powered. However, this study only included officers from one force and thus caution is required when generalising the results across forces. This being said, the sample was found to be relatively representative of the UK Police Force as a whole on a number of socio-demographic variables, such as gender, and years of experience. Furthermore, the current sample was recruited from only 'high-risk' departments. This meant that only those officers who were deemed (by their Occupational Health department) to be at an increased risk of encountering traumatic events were offered an opportunity to take part. Given that burnout and PTSD have been associated with organisational stressors, over and above operational stressors (e.g. Abdollahi, 2002), officers in specialist departments such as those within this study may not actually represent those at 'high-risk' of PTSD. As such this study may have unwillingly captured a sample which may underestimate the presence of burnout (and PTSD) within the wider police population.

A further consideration of this study concerns the measurement of trauma. Trauma experiences were captured using the LEC which allowed individuals to report whether or not critical experiences occurred as 'part of my job', 'happened to me', in addition to other choices. However, the online survey only allowed participants to choose one response, therefore removing the opportunity for participants to report an event as occurring 'directly to me' and as 'part of my job'. Research has also argued that it is not only direct exposure to trauma which is stressful, but that anticipation of potential trauma (van der Kolk, McFarlane, & Weisaeth, 1996), and secondary trauma (Perez, Jones, Englert, & Sachau, 2010) can also have negative consequences. In light of this, there are two main

limitations of the current measurement of trauma. Firstly, the measure was not able to make a distinction between trauma experiences in the context of work, or personal trauma occurring prior to becoming a police officer. Given the impact of previous trauma on future trauma responses (Marmar et al., 2006; Papazoglou, 2013) this would have been a helpful distinction to make. Secondly, this measure does not capture anticipated trauma experiences. Considering that the anticipation of trauma has shown to contribute to trauma responses and general officer stress (van der Kolk et al., 1996), such experiences should also be captured, although this in itself would present particular challenges.

Lastly, the current study's measure of sickness absence brings with it some limitations. Recording sickness absence over two months represents a very short time frame. Rates of sickness absence within the current sample indicated that 60.6% of officers reported at least one day of sickness absence in the previous two months, with reasons for absence encompassing both physical and psychological factors. This figure is much larger than previous research suggests. For example, a sample of Norwegian police officers found that 9.7% of male and 10.3% of female officers reported taking stress-related sick-leave during a one year period (Berg et al., 2006). The results presented by Berg et al. (2006) captured only absence related to stress. It had been suggested that in police officers, work stressors are not translated into self-reports of burnout or stress, but are rather deflected in physical complaints. In light of this, the measure within the current study may more accurately capture the impact of stress on occupational functioning. Given the self-report format of the questionnaire, data are subjected to both subjective biases, as well as relying on an individual to accurately recall memories of absence. Finally, it is important to note that 33.3% of the wider sample did not respond the specific question on sickness absence. The large amount of missing data raised the question of the reliability of this percentage.

It is possible that participants did not respond to the question because they had not taken any sickness absence, therefore when generalised to the wide sample or population, 60% may be too high.

Implications of Findings

Whilst not entirely congruent with the initial hypotheses, the findings from the current study are nonetheless useful in informing current theoretical understanding of the relationship between burnout, social connectedness and PTSD and distress. This new understanding has the potential to inform the advancement of current clinical practice and further research, implications of which will now be outlined.

Clinical and Theoretical Implications. Despite some acknowledgement that supporting police officers in their role is important (NIH, 2007), the results from the current study indicate that there is still a considerable degree of psychological distress within the police, with 8.7% of officers scoring above the cut-off for a clinical diagnosis of PTSD. As such, there is still a way to go to find successful ways to support officers in their job and still a need to identify risk and protective factors in the development of PTSD and general distress. Given that the cross-sectional design of the study does not allow for causal relationships to be assumed, it is challenging to suggest clinical implications and mechanisms for change which focus on a particular construct (in part due to possible reciprocal relationships). Therefore clinical implications will consider all constructs of interest (burnout, social connectedness, PTSD and distress).

Firstly, the current study suggests that it is the officer's levels of exhaustion (rather than burnout more generally) which significantly predicts PTSD and distress. Drawing from the burnout literature, exhaustion has been related to an interaction between job demands and job resources (and possibly personal resources; Xanthopoulou et al., 2007). It is therefore likely that interventions which focus on both reducing demands and developing resources will be most helpful in preventing exhaustion, in turn reducing PTSD symptomatology. Furthermore, research has also suggested that exhaustion (in comparison to other facets of burnout) may be the easiest dimension to influence through interventions. This notion has been established in samples of nursing staff, for example, Freedy and Hobfoll (1994) found that an intervention which included both mastery and social support reduced emotional exhaustion, but had no effect on depersonalization or perceptions of personal accomplishment (on the MBI). Similarly, Schaufeli, (1995) found that a workshop which included relaxation training, cognitive stress management, interpersonal skills training and the enhancement of a more realistic profession role, significantly decreased nurses' levels of emotional exhaustion, but not depersonalisation or personal accomplishment.

Taken together, the multifaceted interventions make it challenging to attribute change in exhaustion to a specific intervention. However such results appear to support the notion that it is a combination of both individual resource and organisational-focused interventions which create change in levels of exhaustion. In this way, research into 'resource investment', a core principle of COR theory highlights the importance of proactive coping as a strategy to target stress, pre-exhaustion (i.e. general stress). There is a wealth of evidence that individuals can be supported to develop a range of resources which in turn may increase resiliency to stress and trauma. This has included specific

resources such as self-efficacy, optimism, and self-esteem (e.g. Bandura, 1997) and resources more broadly such as sense of coherence (Antonovsky, 1979) and learned resourcefulness (Rosenbaum & Ben-Ari Smira, 1986).

The second aspect of such multifaceted interventions may focus on reducing job demands and targeting broader organisational stressors, in contrast to promoting individual resources. Organisational stressors have been found to be consistently stronger predictors of PTSD (Huddleston, Stephens, & Paton, 2007) and burnout (Burke & Paton, 2006) compared to operational aspects of the job. Given that the current results are not able to assume a causal relationship, interventions which target factors associated with both exhaustion and PTSD may be a promising avenue for change. As such, interventions may focus on job redesign, flexible work schedules, and goal setting (Quick, Quick, Nelson, & Hurrell Jr., 1997). A meta-analysis of interventions to manage stress in organisations found that in jobs with a low degree of decision latitude (such as the police), interventions aimed at increasing control should be implemented (van der Klink, Blonk, Schene, & van Dijk, 2001).

Taking a broader, organisational focus when intervening could be argued to be in opposition to appraisal-based theories of stress (e.g. Lazarus & Folkman, 1987) and more in line with COR theory. This theory posits that it is not an individual's perception of resource fit (i.e. balance between job resources and job demands) or appraisal of stress that should be the initial focus, but that interventions should attend to the objective circumstances. Whilst this notion poses a challenge to appraisal-based stress theories, it is not because it disregards appraisal (some of these key resources may even have a perceptual component, such as self-efficacy). Rather, Hobfoll (2001) suggests that the fit

of personal, social, economic, and environmental resources with job demands determines the direction of stress response and subsequent outcomes. Furthermore, COR theory emphasises that change in objective circumstances and successful management of job demands will enhance perceptually based resources (Bandura, 1997)

The current results also suggest that exhaustion significantly predicts general distress. The exact relationship between these constructs is unclear, as there have been inconsistencies within research as to whether symptoms of burnout and depression (captured within the DASS) may co-develop alongside each other, whether they have a reciprocal relationship, or whether burnout may precede depression (Glass & McKnight, 1996). This being said, it is widely acknowledged that symptoms of stress (also included in the DASS) lead to burnout (Maslach & Jackson, 1981). The large shared variance and unclear relationship suggest that clinical interventions focusing on either exhaustion or distress may be of some benefit to the other. In particular, research in police populations has often attended to the role of peer support in managing distress. Interest in peer support interventions within the police emerged in response negative perceptions about accessing support from professionals. To date, peer support programmes may be used to offer support to officers to manage occupational stress or specifically following trauma exposure. As such, they may offer avenues for the treatment of both occupational burnout and PTSD.

Given the wealth of research to suggest that organisational factors such as social support from colleagues and supervisors, have been found to be associated with PTSD in police officers (Martinussen, Richardsen, & Burke, 2007), it may not be surprising that the current study found social connectedness to have a greater impact on PTSD symptoms

severity, over and above exhaustion. At this point it is important to note that in the current study, social connectedness is a construct which was measured across all inter-personal contexts of an individual's life and therefore does not tell us specifically about relationships within a particular context. As this study focuses on police officers and the police force in which they work, and in order to be specific about the implications of social connectedness and its relationship to PTSD, only implications for the wider police context will be discussed. In doing so, it is not assumed that promoting social connectedness in other contexts may not be of use; however its inclusion here may defuse the focus of the current discussion.

It is thought that individuals attempt to develop a stable, secure sense of connectedness in order to satisfy their need for belonging and connection (Baumeister & Leary, 1995; Kohut, 1984). As such, interventions to promote greater social connectedness may be of use and at the societal level (e.g. to improve societal integration with the community) or the social network level (e.g. quality and quantity of ties between people within the organisation). At a societal level, there may already be changes occurring. The Engage guidance (NPIA, 2010) outlined ways in which social media could be used in support of local or neighbourhood policing with an emphasis on openness and accountability that envisages a dialogue between local communities and their local police. However, as the police attempt to foster greater connections with the public, the closure of many local police stations, as Force's across the country attempt to save money, may be more challenging. Many Forces are moving into large centralised stations which take them away from the communities they serve.

At an organisation level, social connectedness may be promoted through group programmes which provide a new, positive social experience for the disconnected police officer. Yalom (1995) proposed that group cohesion is one of the most important factors in group therapy. However it has been suggested that engaging in group work and promoting group cohesion may be less beneficial for individuals with low connectedness as the experience may only act to 'verify' their lack of connectedness, rather than viewing the group as a way to develop a sense of connectedness (McNulty & Swann Jr., 1991). This may provide an explanation for why some clients tend to drop out or not benefit from the group experience and raises the question as to whether or not social connectedness can be altered through intervention. As such, interventions which aim to improve social connectedness may need to be longer than traditional groups and may be more meaningful for people with low levels of connectedness (although there may be high drop-out). This being said, it has been more difficult to consider the implications of social connectedness, in part due to the lack of clarity around its definition. This may go some way to explain why related constructs such as social support have been much more rigorously researched and applied to police populations.

Further organisationally-based interventions such as the Trauma Risk Management (TRiM) programme use peer-support as a way to assess risk and offer post-trauma support. In this way, TRiM aims to encourage help-seeking behaviour post-trauma exposure, to increase normalisation of post-trauma response, psychological distress and help seeking, and in turn encourage referral to psychological intervention where necessary (Greenberg, Langston, & Jones, 2008). As a risk-management programme, TRiM is hypothesised not to have a direct impact on reducing PTSD; however one possible mechanism for its success may lie in how it promotes social connectedness

between colleagues. Social connectedness by definition is ones internal experiences of feeling connected to others. This can include feeling understood and appreciated. TRiM may provide an opportunity for such connections to take place and thus, in turn, reduce ones symptoms of PTSD.

It is also possible that PTSD symptoms cause an individual to become increasingly socially disconnected, as suggested by Snell et al., (2014). As such, interventions which target PTSD may in turn also support an individual to become more socially connected. Firstly, if the focus is initially of the treatment of PTSD, NICE guidelines (NICE, 2005), suggest that cognitive behavioural therapy (CBT) for PTSD should be the first line of psychological treatment. This is in light of research that suggests that PTSD results from trauma-related memory networks containing erroneous associations and interpretations, leading the victim to view him or herself as completely incompetent, and the world as completely dangerous (Foa & Kozak, 1986). More recently, (Becker et al., 2009) found that in sample of 379 police officers, 90% said that they would choose exposure or cognitive processing therapy as their first or second most preferred treatment (compared to medication, psychodynamic psychotherapy, and Eye Movement Desensitization and Reprocessing). Given the possible complex trauma (Herman, 1992) presentation of officers, guidelines suggest that trauma-focused work should take an extended period of time, over the 8-12 sessions recommended by NICE (Cloitre et al., 2011).

More specifically, the current study suggests that exhaustion may also lead to symptoms of intrusion and arousal. Previous research has found that individuals who report symptoms of hyper-arousal as most prominent (compared to other PTSD symptom clusters) showed less symptom improvement relative to others for whom hyper-arousal

was a less prominent (Schell, Marshall, & Jaycox, 2004). In part, this may be due to the associated problems with symptoms of hyper-arousal including depression and chronic distress (Freeman et al., 2009). The results suggest that interventions which target exhaustion may offer a new way of improving these difficult to treat symptoms. However, interventions may also directly target these symptoms. For example, Freeman et al., (2009) summarised that the most applicable tools for addressing symptoms of hyper-arousal are those used in cognitive and behavioural therapies. In particular, those techniques which are used to manage the fight-or-flight response such as breathing and muscle relaxation exercises and may be found more prominently in the 'stabilisation phase' of trauma focused therapy (NICE, 2005).

The results of this current study highlight a number of potential areas on which intervention may focus attention including exhaustion and social connectedness, but also PTSD and general distress. Interventions which attempt to reduce levels of exhaustion may focus on supporting officers to develop a range of resources; however a more promising approach may be to create multi-faceted interventions which focus on the individual as well as the organisation and support staff and managers to manage job demands. Additionally, interventions may wish to focus attention on promoting social connectedness within and outside of the organisation itself. This may be through broader societal campaigns to improve connectedness to non-police officers, but also through peer and group programmes which can facilitate the development of trust and appreciation between colleagues.

Given the lack of causal relationships, interventions may also target PTSD and general distress which may, in turn promote social connectedness and exhaustion. Treatments of

PTSD may include individual CBT and exposure therapies, with an extended time-frame given the complex nature of many of the traumas experienced by officers. In light of the significant relationship between social connectedness and symptoms of intrusion and arousal, treatment may also wish to focus directly on these symptoms using stabilisation techniques to enhance an officer's ability to control and manage these symptoms of hyper-arousal. Treatments for general distress are less well documented and research tends to discuss 'stress management' in relation to the management of depression and anxiety. Once again, peer support has been generally cited as most beneficial, for many of the similar reasons as PTSD (e.g. social learning theory, reduction of stigma).

In summary, clinical implications should aim to consider the level of focus (individual, group, or organisation) as well as the specific nature of the intervention. Interventions which aim to manage individual problems have been most prominent, possibly because of a belief that burnout is in response to individual factors or an assumption that it is easier to change individuals rather than an organisation (Maslach & Goldberg, 1998). However, organisation-wide interventions may offer a much more promising way of reducing the organisational stressors associated with the development of exhaustion and PTSD, and in promoting social connectedness amongst colleagues. Group and organisation wide interventions may offer a mechanism to reduce stigma associated with help-seeking in police officers. Lastly, COR theory suggests that organisations may focus on the development of 'resource caravans' (Hobfoll, 2012, p. 118), where resources are supplied, protected, shared, fostered and pooled within an organisation. Such an approach may offer an opportunity to redirect the focus to the social climate of the organisation rather than externalising failures by blaming employees or groups of employees.

Implications for Future Research. Firstly, future research may wish to address some of the limitations outlined within this chapter. Primarily, researchers should consider longitudinal research in order to explore directionality of the relationship between burnout, social connectedness and PTSD and distress. However, it is important to highlight that the current study found that exhaustion and social connectedness predicted PTSD symptoms. However, longitudinal research will also help explore the stability of constructs, in particular social connectedness. Longitudinal research would help develop our theoretical understanding of whether social connectedness directly impacts PTSD symptoms (as it was not associated with more general distress) or whether another variable such as coping style, moderates or mediates this relationship. Identification of direction and stability of these relationships will contribute to the development of our theoretical understanding. This will also guide subsequent interventions should focus their attention and possibly identify those officers 'at risk' of developing PTSD.

Although the JD-R model makes the distinction between job demands and job resources, Bakker et al., (2005) found that a combination of high demands and low job resources significantly added to predicting the two dimensions of burnout (exhaustion and disengagement). Future research may wish to attempt to distinguish between the types of work factors which contribute to burnout, and possibly PTSD and distress. Maslach, Leiter, and Jackson (2012) identified six broad domains of job–person mismatch: work overload, lack of control, insufficient reward, breakdown of community, absence of fairness, and value conflict. The authors suggested that any or all of these areas may align well with employees' preferences or capacities, encouraging engagement, whereas poor alignments may aggravate burnout. Measures such as the Areas of Worklife Scale (AWS;

Maslach et al., 2012) which assesses the job–person fit within these six domains may provide a greater insight in to what aspects of work are most challenging and thus where subsequent interventions may focus themselves.

Future research should also consider the inclusion of officers in local policing units (e.g. non-specialist departments) in order to improve generalisability of findings to the wider police population. The current study specifically targeted 'high-risk' departments for recruitment which meant that the majority of officers in more local policing units were not included. Given that there is a wealth of research to suggest that burnout (Gershon, Barocas, Canton, Li, & Vlahov, 2009) and PTSD (Huddleston et al., 2007), arise as a result of organisational, rather than operational stressors, it could be argued that the officers in local policing units are at equal, if not greater risk of developing both burnout and PTSD as a consequence of their day-to-day work. Furthermore, it may be that officers in specialist departments have considerable training in order to be able to manage particular stressors, and due to their specific duties are protected from the broader organisational stressors found in the wider police force. Future research using a more inclusive, larger sample would be able to draw comparisons between departmental groups which the current study was unable to do due to the small number of participants within each specialist department.

A further issue that warrants attention is research into appropriate interventions. One of the challenges in developing interventions for the police is to attempt to do so whilst understanding the stigma and barriers to help seeking (Watson, 2013). Interventions more recently have attempted to utilise peer support as a way of getting around such barriers. For example, the TRiM programme trains officers within each department to

risk assess their peers following exposure to a potentially traumatic situation (Greenberg et al., 2008). This has shown some promising results but more research is required for its use in police populations. Given the potential role of burnout in the development of PTSD and distress, research should focus on the development of interventions to target burnout reduction. One suggestion is to look to general models of organisational change and their correspondent strategies which can then be applied to the needs of specific organisations.

Personal Reflections on the Research Process

Working with a police force as an external researcher proved to be challenging at times. In part this was due to working to timescales of others, whilst managing my own academic requirements, but also in communicating with a large, hierarchical organisation of which I was not a part. As outlined in the procedure, the current study was developed from the original, longitudinal study which had to be altered due to the delay in implementing the TRiM intervention programme, in part due to organisational training requirements. The experience of undertaking this research and the difficulties faced in the process gave me a brief insight into some of the organisational challenges faced by officers themselves. The delay in implementation of the TRiM programme meant also a delay to the potential benefits of the programme in supporting officers following exposure to trauma. This led me to feel frustrated at times, especially in light of an email I received from a participant in which they expressed their support for the study but stated that 'things were getting worse', in terms of the demands placed on officers. However, this process also offered an insight in the difficulties faced by the organisation in attempting to implement a new model of post-trauma support. It also brings to question the potential

disparity between research (such as this thesis) making systemic, organisation-wide clinical recommendations, and the time, resources and cost involved in those recommendations being successfully implemented within an organisation. Such a dilemma is even more prominent given the recent cuts to the UK Police Force funding.

The current study utilised a quantitative design in order to explore a new area of research and to try to address some of the barriers to engagement faced when recruiting within a police population. Only on the PCL were participants given an opportunity to describe their most traumatic event in detail. Reading participants' personal accounts of extremely distressing trauma experiences left me feeling powerless to contact those individuals to offer them support. I understood my reaction as the dilemma for clinical psychologists to take on the role of both clinical psychologist and researcher. In my clinical role as a trainee clinical psychologist I have access to the supervisory structures which allow me to reflect on the experience of hearing such accounts of trauma. Within the research context, such structures are less formalised and thus appear to require a degree of resiliency from the researcher. In some ways, this reflects officers' experience of dealing with traumatic events. Whilst reading individual's accounts I was struck by officers need to 'detach' from events. For example officers reported that they, 'just have to deal with it', 'not bothered by any of them [traumatic events], and 'part of day-to-day job'. This led me to question whether clinical psychologists need to take a more prominent role in working with police forces in challenging these beliefs and promoting greater psychological mindedness.

Overall, I have found this an extremely interesting research project which has challenged me to think critically about both research and my clinical practice. In many ways I have

become more aware of the demands I place on myself as a trainee clinical psychologist, attempting to balance the demands of placement and the academic requirements of the training course. Through developing my knowledge and understanding of burnout and its consequences, I have become more aware of my need to maintain work-life balance and acknowledge when that balance is absent. Additionally, as I tried to understand the role of social connectedness in PTSD and distress, I was drawn to think about my clinical practice and the therapeutic relationship. This study suggested that high levels of social connectedness may predict lower PTSD symptoms. There has been a wealth of research also suggesting that it is the therapeutic relationship (rather than a specific treatment model) which is most important in therapeutic work. This led me to consider the important role of feeling 'connected' and feeling understood, something which I have attempted to hold onto during my clinical work.

Summary

Those employed with the police are commonly exposed to both organisational and operational (e.g. potentially traumatic events) within their day to day roles. Such incidents contribute to the development of PTSD and general distress. As the UK Police Force faces increased budget cuts and an increase in organisational pressures, there is a need to investigate risk and protective factors in order to find ways to best support officers in their roles. The current study provides a preliminary insight in the relationship of burnout and social connectedness in the development of PTSD and distress. Mainly, that social connectedness is a greater contributing factor to PTSD than exhaustion, and exhaustion significantly predicts general distress. In contrast to previous literature, neither social connectedness or burnout were significant predictors of sickness absence as

a measure of occupational functioning, although due to the limitations of this measure, the study may not have captured broader physical strain for those officers still in work. However, there is still a way to go in understanding the relationships between these constructs. Future research should attempt to build on this in order to understand the directionality and reciprocity of these relationships in order to focus interventions more successfully. This being said, social connectedness and burnout appear to be promising avenues through which support may be offered within the Police Service and as such warrant further research.

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Appendix A: The Oldenberg Burnout Inventory (OLBI)

Below is a list of statements about how connected people feel to their social world. Please read each statement and circle a number 1, 2, 3, 4 or 5 which indicates how much the statement applied to you over the **past week**. There are no right or wrong answers. Do not spend too much time on any statement.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. I always find new and interesting aspects in my work.					
2. There are days that I feel already tired before I go to work.					
3. It happens more and more often that I talk about my work in a derogatory way.					
4. After my work, I now need more time to relax than in the past to become fit again.					
5. I can stand the pressure of my work very well.					
6. Lately, I tend to think less during my work and just execute it mechanically.					
7. I experience my work as a real challenge.					
8. During my work, I often feel emotionally drained.					
9. With the time, one loses the internal relationship with one's work.					
10. After my work, I usually feel still totally fit for my leisure activities.					
11. Sometimes I feel really sick about my work tasks.					
12. After my work, I usually feel worn out and weary.					
13. I cannot imagine another occupation for myself.					

14. Normally, I can manage the amount of work well.					
15. I get more and more engaged in my work.					
16. When I work, I usually feel energized.					

Subscale items Exhaustion: 2, 4, 5, 8, 10, 11, 12, 14
Disengagement: 1, 3, 6, 7, 9, 13, 15, 16

Items 1, 5, 7, 10, 13, 14, 15, & 16 are reverse scored

Appendix B: Life Events Checklist (LEC-5)

PART 1

Listed below are a number of difficult or stressful things that sometimes happen to people. For each event check one or more of the boxes to the right that are appropriate to you. Be sure to consider your *entire life* (growing up as well as adulthood) as you go through the list of events.

	Happened to me (1)	**Witnessed it (2)**	**Learned about it (3)**	**Part of my job (4)**	**Not sure (5)**	**Doesn't apply to me (6)**
1. Natural disaster (for example, flood, hurricane, tornado, earthquake)						
2. Fire or explosion						
3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash)						
4. Serious accident at work, home, or during recreational activity						
5. Exposure to toxic substance (for example, dangerous chemicals, radiation)						
6. Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)						
7. Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)						
8. Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)						
9. Other unwanted or uncomfortable sexual experience						
10. Combat or exposure to a war-zone (in the military or as a civilian)						
11. Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)						
12. Life-threatening illness or injury						
13. Severe human suffering						

14. Sudden violent death (for example, homicide, suicide)						
15. Sudden accidental death						
16. Serious injury, harm, or death you caused to someone else						
17. Any other very stressful event or experience						

PART 2

A. If you checked anything for #17 in PART 1, briefly identify the event you were thinking of:
_____

B. If you have experienced more than one of the events in PART 1, think about the event you consider the *worst event*, which for this questionnaire means the event that currently bothers you the most. If you have experienced only one of the events in PART 1, use that one as the worst event. Please answer the following questions about the worst event *(check all options that apply)*:

1.Briefly describe the worst event *(for example, what happened, who was involved, etc.)*.
_____
_____
_____
_____

2.How long ago did it happen? _____ *(please estimate if you are not sure)*

3.How did you experience it?
____ *It happened to me directly*
____ *I witnessed it*
____ *I learned about it happening to a close family member or close friend*
____ *I was repeatedly exposed to details about it as part of my job (for example, paramedic, police, military, or other first responder)*
____ *Other, please describe:*

4.Was someone's life in danger?
____ *Yes, my life*
____*Yes, someone else's life*
____*No*

5.Was someone seriously injured or killed?
____ *Yes, I was seriously injured*
____ *Yes, someone else was seriously injured or killed*
____ *No*

6. Did it involve sexual violence? ____*Yes* ____*No*

7.If the event involved the death of a close family member or close friend, was it due to some kind of accident or violence, or was it due to natural causes?
____ *Accident or violence*
____ *Natural causes*
____ *Not applicable (The event did not involve the death of a close family member or close friend)*

8.How many times altogether have you experienced a similar event as stressful or nearly as stressful as the worst event?
____ *Just once*
____ *More than once (please specify or estimate the total # of times you have had this experience _____)*

Appendix C: Post-Traumatic Stress Disorder Check List (PCL-5)

Post-Traumatic Stress Disorder Check List

Below is a list of problems that people sometimes have in response to a very stressful experience. Keeping **your worst event in mind**, 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.**

	Not at all (0)	**A little bit (1)**	**Moderately (2)**	**Quite a bit (3)**	**Extremely (4)**
1. Repeated, disturbing, and unwanted memories of the stressful experience?					
2. Repeated, disturbing dreams of the stressful experience?					
3. Suddenly feeling or acting as if the stressful experience were actually happening again(as if you were actually back there reliving it?)					
4. Feeling very upset when something reminded you of the stressful experience?					
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating?)					
6. Avoiding memories, thoughts, or feelings related to the stressful experience?					
7. Avoiding external reminders of the stressful experience *(for example, people, places, conversations, activities, objects, or situations?)*					
8. Trouble remembering important parts of the stressful experience?					
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?)					

10. Blaming yourself or someone else for the stressful experience or what happened after it?					
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?					
12. Loss of interest in activities that you used to enjoy?					
13. Feeling distant or cut off from other people?					
14. Trouble experiencing positive feelings *(for example, being unable to feel happiness or have loving feelings for people close to you?)*					
15. Irritable behaviour, angry outbursts, or acting aggressively?					
16. Taking too many risks or doing things that could cause you harm?					
17. Being "super-alert" or watchful or on guard?.					
18. Feeling jumpy or easily startled?					
19. Having difficulty concentrating?					
20. Trouble falling or staying asleep?					

DSM-V criterion items

B (Intrusion or re-experiencing) = 1-5
C (Avoidant) = 6-7
D (Negative alterations in mood or cognitions) = 8-14
E (Increased arousal) = 15-20

Appendix D: Depression Anxiety Stress Scale (DASS-21)

Depression Anxiety Stress Scale

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the **past week**. There are no right or wrong answers. Do not spend too much time on any statement.

	Never (0)	**Sometimes (1)**	**Often (2)**	**Almost Always (3)**
1. I found it hard to 'wind down'				
2. I was aware of dryness in my mouth				
3. Couldn't seem to experience any positive feelings at all				
4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)				
5. I found it difficult to work up the initiative to do things				
6. I tended to over-react to situations				
7. I experienced trembling (e.g. in the hands)				
8. I felt that I was using a lot of nervous energy				
9. I was worried about situations in which I might panic and make a fool of myself				
10. I felt that I had nothing to look forward to				
11. I found myself getting agitated				
12. I found it difficult to relax				
13. I felt down-hearted and blue				
14. I was intolerant of anything that kept me from getting on with what I was doing				
15. I felt I was close to panic				
16. I was unable to become enthusiastic about anything				
17. I felt I wasn't worth much as a person				
18. I felt that I was rather touchy				
19. I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)				
20. I felt scared without any good reason				
21. I felt that life was meaningless				

Appendix E: Social Connectedness Scale Revised (SCS-R)

Social Connectedness Scale (Revised)

Following are a number of statements that reflect various ways in which we view ourselves. Rate the degree to which you agree or disagree with each statement using the following scale (1 = strongly disagree and 6 = strongly agree). There is no right or wrong answer. Do not spend too much time with any one statement and do not leave any unanswered

	Strongly Disagree (1)	Disagree (2)	Mildly Disagree (3)	Mildly Agree (4)	Agree (5)	Strongly Agree (6)
1. I feel comfortable in the presence of strangers.						
2. I am in tune with the world.						
3. Even among my friends, there is no sense of brother/sisterhood.						
4. I fit in well in new situations.						
5. I feel close to people.						
6. I feel disconnected from the world around me.						
7. Even around people I know, I don't feel that I really belong.						
8. I see people as friendly and approachable.						
9. I feel like an outsider.						
10. I feel understood by the people I know.						
11. I feel distant from people.						
12. I am able to relate to my peers.						
13. I have little sense of togetherness with my peers.						
14. I find myself actively involved in people's lives.						
15. I catch myself losing a sense of connectedness with society						
16. I am able to connect with other people.						
17. I see myself as a loner.						
18. I don't feel related to most people						
19. My friends feel like family						
20. I don't feel like I participate with anyone or any group.						

Reverse scoring for questions: 3,6,7,9,11,13,15,17,18,20.

Appendix F: Demographic Information

1. What is your age (in years)?

2. What is your gender? - Male/Female

3. How long have you been employed in your current Police Force (in years)?

4. Which Unit/Department do you work in?

7. How long have you been working in your current unit/department for?

Appendix G: Sickness Absence questionnaire

1. How many days have you taken off work in the past two months for being unwell?

2. What was the reason for taking time off work? (Select the most appropriate box and give a brief description)

- Physical.....
- Psychological.....
- Other.....

Appendix H: University of Essex Research and Ethics Committee Approval for Original Study

University of Essex

School of Health and Human Sciences
T 01206 872854
F 01206 873765
E hhs@essex.ac.uk

Colchester Campus
Wivenhoe Park
Colchester CO4 3SQ
United Kingdom
T 01206 873333
F 01206 873598

www.essex.ac.uk

16 July 2014

MISS N. MELUNSKY
4 HOSPITAL LANE
COLCHESTER
CO3 3NA

Dear Nina,

Re: Ethical Approval Application (Ref 13013)

Further to your application for ethical approval, please find enclosed a copy of your application which has now been approved by Dr Wayne Wilson on behalf of the Faculty Ethics Committee.

Yours sincerely,

Mel Wiltshire
Ethics Administrator
School of Health and Human Sciences

cc. Sarah Manning-Press, REO
Leanne Andrews and Pieter Du Toit, supervisors

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2014

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Appendix I: Recruitment Email to Participants

Your chance to influence post trauma support

Have you ever left work feeling stressed or traumatised with the events you have witnessed during your shift? Could more have been done to resolve the mental or physical impact a particular case has had on you? The work of police officers and staff can often place a unique demand and pressures on individuals and teams, and it is these experiences that a university study is looking to capture to help shape the way the force responds to employee wellbeing.

The Occupational Health Department is therefore inviting all officers and staff members to contribute to the University of Essex research ahead of Trauma Risk Management (TRiM) being adopted by the force.

Trauma Risk Management (TRiM) is a peer group risk assessment which will be conducted following the exposure to a traumatic event. By filling in the survey, and then repeating the process in 12 months, you will be able to help evaluate the success of the programme.
[redacted], Force Medical Advisor said: "The research proposes to explore whether there are any differences before and after the implementation of this programme on a number of measures such as general psychological wellbeing, symptoms of post-traumatic stress, social connectedness and burnout.

"Both officers and staff are welcome to take part in this research and you do not need to have been exposed to a traumatic event to take part."

All results from the survey will be kept completely confidential. The email address you provide will be stored securely and accessed only by the lead researcher. The data you provide will be kept separately from your email address. All information will be kept securely, and your employing organisation will have no access to your individual responses.

Click here to take part in the survey https://essex.eu.Qualtrics (Qualtrics, 2015).com/SE/?SID=SV_do6uGMvw7HP4mCV

[redacted] added: "Please be aware that some of the questions refer to your experience of potentially traumatic events. If you feel uncomfortable recalling such information there is an option to skip these parts of the survey. "

For more information about the help and support available to colleagues, both internally via Occupational Health and externally via a range of organisations and partners click here
http://intranet2/hq_departments/corporate_hr/occupational_health/self_help_and_support_toolkit/stress_and_mental_health.aspx

Appendix J: Information Page

You are invited to take part in a research study **examining the relationship between social connectedness, burnout and post-trauma support.**

Before you decide about taking part, it is important for you to understand why the research is taking place, and what it will involve. Please take the time to read the following information carefully. Please contact the researcher if you would like more information. Take time to decide if you would like to take part.

Who is doing this research?
My name is Nina Melunsky and I am a Trainee Clinical Psychologist at the University of Essex. This research is supervised by Dr. Leanne Andrews (University of Essex) and Dr Pieter du Toit (University of Essex).

What is the purpose of the study?
Some UK Police Forces currently use the Trauma Risk Management (TRiM) program which is a peer-group risk assessment conducted following exposure to a traumatic event. The research proposes to explore whether there are any differences before and after the implementation of this programme on a number of measures such as general psychological wellbeing, symptoms of post-traumatic stress, social connectedness and burnout.

Who can take part?
Any Police Officer or members of Police staff (at all grades) are welcome to take part in this research. **You DO NOT need to have been exposed to a traumatic event to take part.**

Do I have to take part?
There is no obligation to take part in this research.

What will I have to do if I agree to take part?
This research takes the form of an online survey. When you complete the survey the first time, you will be asked to enter your email address. This will allow us to contact you again in 1 year with a link to the follow-up survey. Please be aware that both surveys will take approximately 30-45 minutes so ensure that you have enough time to take part.

Please be aware that some of the questions refer to your experience of potentially traumatic events. If you feel uncomfortable recalling such information there is an option to skip these parts of the survey. However, if you have received a specific diagnosis of PTSD or any other anxiety disorder and are not sure whether you want to take part, you might like to discuss your decision to participate with your health professional or Occupational Health and Welfare department/advisors.

Will my responses be kept confidential? All results from the survey will be kept completely confidential. The email address you provide will be stored securely and accessed only by the lead researcher. The data you provide will be kept separately from your email address. **All information will be kept securely, and your employing organisation will have no access to your individual responses.**

Can I withdraw from the study after I have started to complete the survey?
You can withdraw from the study at any time before selecting the 'submit' button at the end of the survey. If you do not select the submit button, your data will be deleted. If you decide to withdraw your data following completion of the survey (at either time-points), you can contact the researcher who will delete your information.

What happens when the research study stops?
All responses will be kept completely anonymous, however will be written up by the researcher as part of a Doctorate in Clinical Psychology thesis. They may also be written up for publication in an academic journal. It will not be possible to identify you in these reports.

Who has reviewed the study?
The research protocol has been reviewed and approved by the Faculty Research Ethics Committee at the University of Essex.

Will I be able to see the results of the study? If you would like to see a summary of the results, these will be available from April 2016. You can contact Nina Melunsky by email (nmelun@essex.ac.uk) for these.

Who should I contact if I want more information, or wish to make a complaint, about the study? You can contact the researcher, Nina Melunsky, at nmelun@essex.ac.uk, or the supervisors, Dr. Leanne Andrews at landre@essex.ac.uk and Dr Pieter du Toit at pdutoit@essex.ac.uk.

Thank you for taking the time to read this.

Please click on the link below to answer the questions.

Appendix K: Consent Page

CONSENT TO PARTICIPATE IN THIS RESEARCH

Please read the following statements and indicate your agreement if you consent to taking part in this study:

1. I have read and understood the overview of this research and that as part of this study I will be asked to complete an online questionnaire at two time points.
(I agree)

2. I am over 18 years of age
(I agree)

3. I understand that my participation in this research is voluntary
(I agree)

4. I understand that I may choose to withdraw from this research and not submit my responses at any point during the completion of the online questionnaire by leaving the webpage without submitting. If you chose to withdraw from the study at the second survey, you can also ask the researcher to delete your responses from your first survey.
(I agree)

If you have clicked 'I agree' to the above statements then please click the NEXT PAGE button at the bottom of this page to begin the online questionnaire.

Note: the questionnaire will only move on if ‘I agree’ is selected for all above questions

Appendix L: Debrief Page

THANK YOU FOR TAKING THE TIME TO TAKE PART IN THIS STUDY

Your responses are anonymous and will remain confidential. Your employer WILL NOT be informed of your individual responses under any circumstances.
If you found that you became upset or distressed whilst completing the questions, and would like to receive further support or guidance, or if you have any questions about coping with stress, post-traumatic stress disorder, or other mental health concerns, then the following services are recommended:

Occupational Health

Contact [redacted] Occupational Health Employee Support Manager on [redacted] or call [redacted]

Anxiety UK

User-led organisation providing information, advice and support.
Visit www.anxietyuk.org.uk or call the helpline (08444 775 774) Monday- Friday 9:30am-5:30pm

Mind

Mental health charity providing advice, information and links to further support/services.
Visit www.mind.org.uk/ or call 0300 123 3393

Samaritans

Confidential emotional support 24hrs a day. Visit www.samaritans.org, or call the helpline (08457 90 90 90).

You can also make an appointment with your **GP**

If you have any further questions about the study or you wish to make a complaint please contact the researcher, Nina Melunsky on nmelun@essex.ac.uk, or the study supervisor, Dr. Leanne Andrews at landre@essex.ac.uk.

Appendix M: University of Essex Research and Ethics Committee Approval

University of Essex

School of Health and Human Sciences
T 01206 872854
F 01206 873765
E hhs@essex.ac.uk

Colchester Campus
Wivenhoe Park
Colchester CO4 3SQ
United Kingdom
T 01206 873333
F 01206 873598

www.essex.ac.uk

24 November 2015

MISS N. MELUNSKY
3 GLEBE COURT
THE GLEBE
LONDON
SE3 9TH

Dear Nina,

Re: Ethical Approval Application (Ref 14006a)

Further to your application for ethical approval, please find enclosed a copy of your application which has now been approved by the School Ethics Representative on behalf of the Faculty Ethics Committee.

Yours sincerely,

Lisa McKee
Ethics Administrator
School of Health and Human Sciences

cc. Research Governance and Planning Manager, REO
Supervisor

THE QUEEN'S ANNIVERSARY PRIZES
2009

Appendix N: Re-Consent Email to Participants

Dear Participant,

Thank you for your participation in the online survey investigating **The Effectiveness of Trauma Risk Management (TRiM) in Reducing Officer Burnout and Promoting Social Connectedness**. At the time you were made aware that you would be contacted again to complete the survey after 1 year, however we have had to put this on hold for the time being due to the delay in implementing TRiM within the Force. In the meantime, we would like to analyse the data from the original survey to explore a new research question.

New Research:
Police officers are repeatedly subjected to stressful and traumatic events. It is the culmination of these events which can lead to burnout, thus depleting an officer's resources and potentially their ability to successfully manage future stressful events. Primarily, we would like to explore the relationship between burnout and post-traumatic stress symptoms (and general psychological well-being), and whether social connectedness has an impact on this relationship.

*****Please click 'reply' to this email and put an 'x' in one of the boxes below*****

Yes, I agree to my data being included in the new analysis [ ]
No, do not use my data in the new analysis [ ]

If you have any questions you can contact me at nmelun@essex.ac.uk, or the supervisors, Dr. Leanne Andrews at landre@essex.ac.uk and Pieter du Toit at pdutoit@essex.ac.uk.

Kind Regards
Nina Melunsky
Trainee Clinical Psychologist

North Essex Partnership NHS Foundation Trust/University of Essex

Appendix O: Reminder Email to Participants

Dear Participant,

You were emailed previously regarding your participation in the online survey investigating **The Effectiveness of Trauma Risk Management (TRiM) in Reducing Officer Burnout and Promoting Social Connectedness**. If you are receiving this email it is because you have not yet responded.

This is the **final reminder** email and the cut-off for responding is **Friday 8th January 2016**.
When you originally completed the survey, you were made aware that you would be contacted again to complete the survey after one year; however we have had to put this on hold for the time being due to the delay in implementing TRiM within the Force. In the meantime, we would like to analyse the data from the original survey to explore a new research question. **For this new research question you will not have to answer any further questions.**

New Research:
Police officers are repeatedly subjected to stressful and traumatic events. It is the cumulation of these events which can lead to burnout, thus depleting an officer's resources and potentially their ability to successfully manage future stressful events. Primarily, we would like to explore the relationship between burnout and post-traumatic stress symptoms (and general psychological well-being), and whether social connectedness has an impact on this relationship. Once again, all data will be kept completely confidential.

*******Please click 'reply' to this email and put an 'x' in one of the boxes below*******

Yes, I agree to my data being included in the new analysis [ ]
No, do not use my data in the new analysis [ ]

If you have any questions you can contact me at nmelun@essex.ac.uk, or the supervisors, Dr. Leanne Andrews at landre@essex.ac.uk and Pieter du Toit at pdutoit@essex.ac.uk.

Kind Regards

Nina Melunsky
Trainee Clinical Psychologist
North Essex Partnership NHS Foundation Trust/University of Essex

Appendix P: Correlation Table for Demographic and Outcome Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
PCL	-	-	-	-	-	-	-	-	-	-	-	-	-
1. Total Severity Score	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Intrusion Cluster	.845**	-	-	-	-	-	-	-	-	-	-	-	-
3. Avoidance Cluster	.806**	.626**	-	-	-	-	-	-	-	-	-	-	-
4 NACM Cluster	.923**	.662**	.719**	-	-	-	-	-	-	-	-	-	-
5. AAR Cluster	.922**	.695**	.664**	.801**	-	-	-	-	-	-	-	-	-
DASS	-	-	-	-	-	-	-	-	-	-	-	-	-
6. Total Score	.478**	.367**	.302**	.390**	.556**	-	-	-	-	-	-	-	-
7. Depression Subscale	.532**	.384**	.327**	.483**	.593**	.933**	-	-	-	-	-	-	-
8. Anxiety Subscale	.336**	.284**	.219*	.239*	.406**	.870**	.723**	-	-	-	-	-	-
9. Stress Subscale	.415**	.323**	.267*	.318**	.499**	.921**	.797**	.694**	-	-	-	-	-
Sickness Absence	-	-	-	-	-	-	-	-	-	-	-	-	-
10. Number of Days	.389**	.301*	.344**	.348**	.367**	.329**	.347**	.246	.293*	-	-	-	-
Demographic Variables	-	-	-	-	-	-	-	-	-	-	-	-	-
11. Age (Years)	-.060	.052	-.054	-.124	-.064	.074	.063	.073	.069	.020	-	-	-
12. Years in the Police	-.077	.042	-.073	-.125	-.096	.011	-.019	.042	.013	-.095	.815**	-	-
13. Gender	-.005	.050	.001	.039	-.095	-.086	-.160	-.041	-.025	-.199	-.152	-.089	-