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**DEVELOPING EFFECTIVE NARRATIVE EXPOSURE  
THERAPY INTERVENTIONS FOR SAUDI FIREFIGHTERS**

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## **Abstract**

Firefighters have a high likelihood of being exposed to a variety of traumatic events. The psychological cost of this exposure may be an increased risk of long-term problems such as PTSD symptoms, depression and anxiety. Saudi firefighters in Makkah province are often exposed to elevated levels of potentially traumatising events through the course of their work which can affect them physically and psychologically. However, providing sufficient mental health professionals is difficult due to the absence of psychological trauma care in Saudi Arabia and Saudi culture associated with the psychological support. The aim of this thesis is to understanding the psychological impact of being a firefighter and seeing whether narrative exposure therapy (NET) is an effective treatment for traumatised Saudi firefighters. Three studies were conducted In order to achieve these aims. The first administered questionnaires to 200 Saudi firefighters; the second was a qualitative study comprising of semi-structure life story interviews with 9 traumatised Saudi firefighters, whilst the final randomized control trial (RCT) examined the effectiveness of NET with 34 Saudi firefighters with PTSD. A high prevalence rate of PTSD (57%), anxiety (44.4%), and depression (53.3%) symptoms with limited mental health support were reported. Single firefighters reported PTSD symptoms and the use of passive coping strategies more than the married firefighters. The results also revealed that marriage was associated with low levels of PTSD, while high levels of PTSD correlated with anxiety, depression, and with passive coping strategies. The qualitative

study illustrated themes and subthemes reflected family life, education, experience of being firefighters, traumatic, coping strategies. Two narrative analysis cases presented with the life plot trend with the positive impact of the individual's life story interview which inform the using of narrative technique in the intervention study. The RCT study demonstrated a significant reduction in PTSD, anxiety, and depression symptoms after 6 weeks, but this was not sustained at 3 and 6 months.

The research provides evidence for the applicability and effectiveness of a narrative intervention for traumatised Saudi firefighters. It tried to facilitate the wider dissemination of psychological intervention to promote recovery from traumatic stress for the first responders. Four sessions might not give firefighters sufficient time to process all the relevant information, and they therefore reported an increase in PTSD symptoms in the follow-up time. It would be preferable for firefighters to receive two or three NET sessions after a 3 and/or 6-month follow-up. The findings help advance current knowledge in the management of PTSD among firefighters, in-depth understanding the psychological, coping, and cultural backgrounds, in developing countries, contribute to the validation of PTSD theories, and inform future research. The implications of developing a multi-factorial and holistic approach to the treatment of first responders' traumas are presented and a case is made for the use of narrative methods in the treatment of complex trauma.

## **Dedication**

I dedicate my thesis to my father and my mother, who taught me that largest task can be accomplished with determination and faith.

To my father; you did not have the chance to see your dreams, another one is achieved.

This thesis is also dedicated to my sisters and brothers Ali, Hussain, Abdullah, Bandar, and Bard for their unlimited and sincere support.

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## Publications and Conferences

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# List of contents

<b>Abstract .....</b>	<b>I</b>
<b>Dedication.....</b>	<b>III</b>
<b>Acknowledgment .....</b>	<b>IV</b>
<b>Publications and Conferences .....</b>	<b>VI</b>
<b>List of contents.....</b>	<b>VIII</b>
<b>List of tables.....</b>	<b>XV</b>
<b>List of figures.....</b>	<b>XVII</b>
<b>List of Abbreviations .....</b>	<b>XVIII</b>
<b>Chapter 1: Literature review .....</b>	<b>1</b>
1.1 Introduction .....	1
1.2 Post-traumatic stress disorders (PTSD) .....	5
1.2.1 Overview and the diagnostic criteria of PTSD .....	5
1.2.2 Risk and protective factors for PTSD .....	10
1.2.2.1 Traumatic events .....	13
1.2.2.2 Coping strategies .....	17
1.2.2.3 Social support .....	24
1.2.2.3.1 Social support and trauma .....	26
1.2.2.4 Comorbidity and PTSD .....	29
1.2.2.4 PTSD and related factors .....	32
1.2.3 Theories: Understanding PTSD .....	35
1.2.3.1 Emotional Processing Theory .....	36
1.2.3.2 Dual Representation Theory.....	38
1.2.3.3 Ehlers and Clark's cognitive model.....	40
1.2.4 Narrative approach and trauma .....	42
1.2.5 Summary.....	44
1.3 First responders and emergency service personal .....	46

1.3.1 Prevalence of PTSD in firefighters .....	47
1.3.2 Firefighters in Saudi Arabia.....	50
1.3.2.1 Saudi culture.....	53
1.3.2.2 Mental health in Saudi Arabia .....	56
1.3.3 Summary.....	60
1.4 Treatment of PTSD.....	61
1.4.1 Effective interventions for PTSD and their limitations .....	63
1.4.2 Randomised control trials (RCTs) for treating PTSD in first responders.....	67
1.4.3 Narrative Exposure Therapy (NET) .....	70
1.4.3.1 Therapeutic process.....	72
1.4.3.2 Narrative exposure therapy (NET) and PTSD.....	75
1.4.3.3 Evidence of the effectiveness of NET .....	77
1.4.4 Summary.....	82
1.5 Conclusion.....	84
1.6 Study aims.....	86
<b>Chapter 2: Methodology .....</b>	<b>88</b>
2.1 Overview.....	88
2.2 Rationale for the choice of methods .....	89
2.2.1 Questionnaires.....	89
2.2.2 Life-story interviews .....	92
2.3 Study design.....	95
2.3.1 Cross-sectional design .....	96
2.3.2 Life-story interview .....	97
2.3.3 Randomised controlled trial (RCT) design .....	98
2.4 Study populations.....	100
2.5 Measurements.....	101
2.5.1 Firefighters Trauma History Screen (FTHS).....	102
2.5.2 Scale of Posttraumatic Stress Symptoms (SPTSS).....	103

2.5.3 Hospital Anxiety and Depression Scale (HADS) .....	104
2.5.4 Brief COPE (BC) .....	105
2.5.5 Social Support scale .....	106
2.6 Data collection .....	107
2.7 Ethical considerations .....	108
2.8 Chapter summary and conclusion .....	110
<b>Chapter 3: Scale development.....</b>	<b>112</b>
3.1 Introduction .....	112
3.2 Validation Study One: Firefighters Trauma History Screen (FTHS).....	113
3.2.1 Method .....	113
3.2.1.1 Participants .....	113
3.2.1.2 Procedure .....	114
3.3 Developing and Evaluation of Firefighters Trauma History Screen (THS) .....	115
3.3.1 Face validity .....	120
3.3.2 Reliability .....	121
3.4 Validation Study Two: The Brief COPE scale.....	121
3.4.1 Method .....	121
3.4.1.1 Participants .....	121
3.4.2 Brief COPE .....	123
3.4.3 Factor analysis .....	128
3.4.5 Internal consistency .....	130
3.4.5.1 Item-total correlations for factors .....	131
3.4.5.1.1 Active coping strategies .....	131
3.4.5.1.2 Passive coping strategies .....	133
3.4.6 Test-retest reliability of the Brief COPE .....	133
3.5 Discussion .....	134
3.6 Conclusion.....	136

**Chapter 4: The prevalence rate of trauma and related symptoms and risk factors ..... 137**

4.1 Introduction ..... 137

4.2 Method ..... 138

    4.2.1 Participants ..... 138

    4.2.2 Measures ..... 139

    4.2.3 Procedure ..... 140

    4.2.4 Data analysis ..... 140

4.3 Results ..... 141

    4.3.1 The most frequent and distressful events ..... 141

    4.3.2 Type of exposure ..... 143

    4.3.3 PTSD and the Hospital Anxiety and Depression Scale (HADS) ..... 144

        4.3.4.1 Descriptive analysis of coping strategies, and social support ..... 146

    4.3.5 Risk factors ..... 147

        4.3.5.1 Marital status and psychological symptoms ..... 148

        4.3.5.2 Education and psychological symptoms ..... 149

        4.3.5.3 Independent predictors of PTSD ..... 150

4.6 Discussion ..... 156

4.7 Building a model of trauma ..... 159

4.8 Limitation ..... 161

4.9 Conclusion ..... 161

**Chapter 5: The Life Story Interview ..... 164**

5.1 Introduction ..... 164

5.2 Method ..... 166

    5.2.1 Participants ..... 166

    5.2.2 Interview schedule ..... 168

        5.2.2.1 Developing the interview guide ..... 169

        5.2.2.2 Piloting the interview ..... 170

5.2.3 Procedure .....	170
5.2.4 Analysis of the life story interview transcripts .....	171
5.3 Results.....	173
5.4 Thematic analysis.....	175
5.4.1 Theme 1: Family.....	175
5.4.1.1 Living conditions .....	176
5.4.1.2 Responsibility.....	178
5.4.1.3 Personal trauma .....	180
5.4.1.3.1 Physical abuse.....	180
5.4.1.3.2 Death .....	182
5.4.1.4 Support .....	184
5.4.2 Theme 2: Education .....	186
5.4.2.1 Difficulty.....	187
5.4.2.2 Opportunity .....	188
5.4.3 Theme 3: Firefighter’s Experience .....	192
5.4.3.1 Experience of becoming firefighters.....	193
5.4.3.2 Negative aspects of being a firefighter.....	195
5.4.3.2.1 Traumatic events .....	195
5.4.3.2.2 Shift work and time .....	198
5.4.3.3 Positive aspects of being a firefighter .....	199
5.4.4 Theme 4: Coping Strategies .....	201
5.4.5 Impact of interview.....	206
5.5 Narrative analysis .....	208
5.5.1 Participant Number One: M.G.....	209
5.5.2 Participant Number Two: F.TH. ....	213
5.6 Discussion .....	217
5.7 Building a model of trauma .....	220
5.8 Limitation.....	224
5.9 Conclusion.....	225

**Chapter 6: The effectiveness of Narrative Exposure Therapy (NET) with traumatised firefighters in Saudi Arabia: a randomised controlled trial .....227**

6.1 Introduction ..... 227

6.2 Methods..... 228

6.2.1 Design ..... 228

6.2.2 Participants ..... 229

6.2.3 Measures ..... 230

6.2.4 Procedure ..... 231

6.2.5 Treatment ..... 233

6.2.6 Statistical analysis ..... 233

6.3 Results..... 235

6.3.1 Treatment adherence ..... 235

6.3.2 Baseline data..... 235

6.3.3 Treatment effect..... 236

6.3.4 Initial treatment outcome ..... 239

6.3.5 Three and six-month follow-up outcome ..... 240

6.4 Discussion ..... 243

6.5 Limitation..... 245

6.5 Conclusion..... 246

**Chapter 7: General discussion and conclusion .....248**

7.1 Overview ..... 248

7.2 Summary of the main findings..... 249

7.3 Discussion of the study findings ..... 252

7.3.1 Trauma-related symptoms and risk factors..... 253

7.3.2 Coping strategies ..... 258

7.3.3 Social support ..... 262

7.3.4 PTSD comorbidity ..... 263

7.4 The predictive model of PTSD.....	266
7.5 Traumatized firefighters .....	270
7.6 Theoretical model.....	274
7.7 Theoretical foundations.....	278
7.7.1 Theoretical foundations and explanations for the effectiveness of narrative interventions.....	278
7.7.2 The diagnosis of PTSD.....	280
7.8 Methodological findings .....	283
7.9 Implications.....	285
7.10 Limitations .....	288
7.11 Contributions .....	292
7.12 Future work .....	293
7.13 Conclusions .....	295
<b>References .....</b>	<b>297</b>
<b>Appendix A: Ethics approval.....</b>	<b>323</b>
<b>Appendix B: Informed consent form .....</b>	<b>324</b>
<b>Appendix C: Questionnaires .....</b>	<b>333</b>
Firefighters Trauma History Screen (FTHS).....	333
Brief COPE.....	334
Screen for Posttraumatic Stress Symptoms (SPTSS).....	335
The Hospital Anxiety and Depression Scale (HADS) .....	336
Social Support Scale.....	337
<b>Appendix D: Life Story Interview .....</b>	<b>338</b>
<b>Appendix E : Narrative Exposure Therapy (NET) training .....</b>	<b>344</b>

## List of tables

<b>Table 1:1 Prevalence of PTSD in firefighters between countries</b> .....	49
<b>Table 2.1 Study setting</b> .....	96
<b>Table 3.3: The Trauma History Screen (THS)</b> .....	119
<b>Table 3.4: List of Traumatic Events: The final scale</b> .....	120
<b>Table 3.5: Socio-demographic characteristics of participants (n=200)</b> .....	122
<b>Table 3.6: Jaber’s Brief COPE subscales and their items</b> .....	127
<b>Table 3.7: Factors of the Brief COPE (BC)</b> .....	129
<b>Table 3.8: Item-total correlations for the factor ‘active coping strategies’</b> .....	132
<b>Table 3.9: Item-total correlations for the factor ‘passive coping strategies’</b> .....	133
<b>Table 4.2: Number of firefighters exposed to each event, reported feelings of distress, and frequency of the incident (n=200).</b> .....	141
<b>Table 4.3: Number of traumatic events experienced by participants or their family members or friends (n=169)</b> .....	144
<b>Table 4.4: Prevalence of PTSD symptoms, and depression and anxiety</b> .....	145
<b>among the participants (n=169)</b> .....	145
<b>Table 4.5: Differences between PTSD Groups in Depression and Anxiety</b> .....	145
<b>Categories</b> .....	145
<b>Table 4.6: Mean and standard deviation of measures</b> .....	146
<b>Table 4.7: T-test results by marital status</b> .....	148
<b>Table 4.8: ANOVA results by education</b> .....	149
<b>Table 4.9: Correlation coefficients of factors entered into the stepwise multiple regressions</b> .....	153
<b>Table 4.10: Multiple regression analysis: Summary of variables predicting PTSD.</b>	154
<b>Table 4.11: Multiple regression analysis: Summary of variables predicting PTSD without depression and anxiety</b> .....	154
<b>Table 4.12: Multiple regression analysis: Summary of variables predicting Anxiety.</b>	155
.....	
<b>Table 4.12: Multiple regression analysis: Summary of variables predicting Depression</b> .....	155
<b>Table 5.1: Participants Characteristics (n=9)</b> .....	168
<b>Table 5.1: Saudi firefighters’ life stories: Themes and subthemes (n=9)</b> .....	174
<b>Table 6.1: Socio-demographic characteristics of participants within the two treatment groups (n=34).</b> .....	230

<b>Table 6.2: Measures over time for treatment (n=17) and waiting-list control (n=17) groups.....</b>	<b>236</b>
<b>Table 6.3: Result of outcome measure of T1 and T2: Means difference, 95% CI, paired t-test, within group effect sizes, ANCOVA analysis, and between group effect sizes. ....</b>	<b>239</b>
<b>Table 6.4: Repeated ANOVA of time (pre-treatment, post-treatment, follow-up1T4, follow up2T5) × group (NET, WLC) with post-hoc Benoferroni tests and the within group effect sizes. ....</b>	<b>241</b>

## List of figures

Figure 3.1: Brief COPE Screen Plot.....	130
Figure 4.1: The prediction model of PTSD.....	160
Figure 5.1: The sampling stages for participants in the qualitative study... 166	
Figure 5.2: A thematic map of the ‘family’ theme.....	175
Figure 5.3: A thematic map of the ‘education’ theme .....	186
Figure 5.4: A thematic map of the ‘firefighters’ experience theme’ .....	192
Figure 5.6: A thematic map of the ‘coping strategies’ theme .....	201
Figure 5.8: F.TH.’s life plot line graph.....	213
Figure 5.9: Thematic analysis and narrative analysis diagram.....	222
Figure 6.1; CONSORT diagram showing the flow of participants through each group. ....	232
Figure 6.2: Mean reported PTSD scores for the two groups (n=34) .....	237
Figure 6.4: Mean depression score for the two groups (n=34) .....	238
Figure 7.1 Theoretical model for identifying effective ways of reducing the PTSD or other symptoms suffered by Saudi firefighters and improving their coping strategies .....	275

## List of Abbreviations

<b>APA</b>	American Psychology Association
<b>ASR</b>	Acute Stress Reaction
<b>ASD</b>	Acute stress disorder
<b>BEP</b>	Brief Eclectic Psychotherapy
<b>BEP</b>	Brief Eclectic Psychotherapy
<b>BC</b>	Brief Cope
<b>BDI</b>	Beck Depression Inventory
<b>CAPS</b>	Clinician-Administered PTSD Scale
<b>CIDI</b>	Composite International Diagnostic Interview
<b>CBT</b>	Cognitive Behavioural Therapy
<b>DSM-IV</b>	Diagnostic and Statistical Manual of Mental Disorders
<b>DSM-III</b>	Diagnostic and Statistical Manual of Mental Disorders-III
<b>EMDR</b>	Eye Movement Dispensations and Reprocessing
<b>EF</b>	Emotion-Focused Coping
<b>FTHS</b>	Firefighters Trauma History Screen
<b>GO-NGO</b>	Governmental and Non-Governmental Organisations
<b>GNT</b>	Guided Narrative Techniques
<b>HMS</b>	High Magnitude Stressor
<b>HADS</b>	Hospital Anxiety and Depression Scale
<b>ICD</b>	International Classification of Diseases
<b>IES</b>	Impact of Event Scale
<b>IWHO</b>	The Institute of Work, Health and Organisations

<b>KSA</b>	Kingdom of Saudi Arabia
<b>LEC</b>	Live Event Checklist
<b>LSI</b>	Life Story Interview
<b>NICE</b>	National Institute of Health and Clinical Excellence
<b>NET</b>	Narrative Exposure Therapy
<b>PRCT</b>	Preliminary Randomised Clinical Trial
<b>PTSD</b>	Post-traumatic Stress Disorder
<b>PTE</b>	Potentially Traumatic Events
<b>PF</b>	Problem-Focused Coping
<b>PE</b>	Psycho-Education
<b>PHC</b>	Primary Healthcare Centre
<b>PQA</b>	Personal Qualities and Attributes
<b>RCT</b>	Randomized Controlled Trial
<b>SC</b>	Supportive Counselling
<b>SIT</b>	Stress Inoculation Training
<b>SR</b>	Saudi Riyals
<b>SPTSS</b>	Scale of Posttraumatic Stress Symptoms
<b>SAM</b>	Situational Accessible Memory
<b>SOC</b>	Sense of Coherence
<b>SES</b>	Socioeconomic Status
<b>SAMHA</b>	Saudi Arabian Mental and Social Health Atlas
<b>TFCBT</b>	Trauma Focused Cognitive Behaviour Therapy
<b>THS</b>	Trauma History Screen

<b>TC</b>	Trauma Counselling group
<b>VAM</b>	Verbally Accessible Memory
<b>WHO</b>	World Health Organization
<b>WLC</b>	Wait-List Control
<b>WI</b>	Writing Intervention

## Chapter 1: Literature review

### *1.1 Introduction*

Firefighters have a high probability of being exposed to a variety of traumatic events. Potentially traumatic events can occur during any rescue. The trauma may arise from providing aid to seriously injured or helpless victims; serious injuries to self, work colleagues, and victims; and exposure to death and dying. Moreover, firefighters who are injured or disabled in the line of duty may have to retire as a consequence of their injury or occupational disease. The psychological cost of this exposure may increase the risk of long-term problems such as post-traumatic stress disorder (PTSD) symptoms (Al-Naser & Everly, 1999; Richard A. Bryant & Guthrie, 2007; Corneil, Beaton, Murphy, Johnson, & Pike, 1999; Mitani, Fujita, Nakata, & Shirakawa, 2006; Neuner, Onyut, et al., 2008), as well as depression and anxiety (Carey, S. S. Al-Zaiti, Dean, L. Sessanna, & D. S. Finnell, 2011; Chen et al., 2007; Heinrichs et al., 2005). It should be noted however that despite repeated exposure to potentially traumatic events, most firefighters do not develop PTSD symptoms.

The reported prevalence rate for PTSD in firefighters differs widely, from 6.5% (Haslam & Mallon, 2003) to 37% (Bryant. & Harvey., 1995). Differences in prevalence rates for PTSD might be related to: the sample size (Corneil et al., 1999; Haslam & Mallon, 2003); the type of research participant such as firefighters only (Al-Naser & Everly, 1999; Bryant. & Harvey., 1995) or a mix of

other emergency responders (Epstein, Fullerton, & Ursano, 1998; Marmar, Weiss, Metzler, Ronfeldt, & Foreman, 1996); and the nature of PTSD measures, since some scales represent an incomplete measure of PTSD symptoms when compared to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (Epstein et al., 1998; Mitani et al., 2006).

A range of factors can affect the prevalence rates of PTSD positively or negatively. For example, the type and severity of the traumatic event can lead to an increase in negative affect (Angleman, 2010), whereas multiple traumas may contribute to the development of useful coping strategies among firefighters (Del Ben, Scotti, Chen, & Fortson, 2006). Coping strategies can either protect against, or contribute to the development of PTSD in firefighters, depending on how effective they are (Armstrong, Shakespeare-Finch, & Shochet, 2014; R. Beaton, Murphy, Johnson, Pike, & Corneil, 1999). Social support is another factor which can play a significant role in predicting both PTSD symptoms and depression (Regehr, Hill, Knott, & Sault, 2003a). Finally, other risk factors such as more years of service (Murphy, Beaton, Pike, & Cain, 1994), lower education level (Bruce P. Dohrenwend, 2000), and cultural issues (Harold G Koenig et al., 2014) might be associated with psychological symptoms such as PTSD, anxiety and depression.

Firefighters who have experienced traumatic events often experience an increase in associated symptoms of PTSD and comorbidity with PTSD such as depression and anxiety. While some firefighters may recover on their own, others will need to access mental healthcare programmes to assist their

recovery. Researchers have highlighted a need for enhanced knowledge about current PTSD treatments, such as trauma-focused cognitive behaviour therapy (TFCBT) and eye movement desensitization and reprocessing EMDR (Robjant & Fazel, 2010). Moreover, there is a need for effective alternative treatments to be devised which can reduce drop-out rates, treatment failures, easy to use and acceptable in different cultures (Cukor, Spitalnick, Difede, Rizzo, & Rothbaum, 2009), as well as understanding of the event within the context of the complete life story (Pennebaker & Seagal, 1999).

Narrative approach has been considered a part of our daily lives in terms of making sense of the world around us and communicating with others. The story-telling or narrative can be a helpful means of re-organising the chaotic nature of experiences (Goncalves, Korman, & Angus, 2000).

Narrative Exposure Therapy (NET) is a short-term treatment which has been developed specifically to treat PTSD symptoms resulting from violence and multiple traumas (Schauer, Neuner, & Elbert, 2011). NET has been found to be effective in treating PTSD and depression in both adults and adolescents, including: asylum seekers (Neuner, Onyut, et al., 2008), internally displaced refugees (Adenauer et al., 2011), former political prisoners (Bichescu, Neuner, Schauer, & Elbert, 2007), earthquake survivors (Zang, Hunt, & Cox, 2013), and Bosnian survivors of war (Hadziosmanovic, 2014).

Randomised Control Trials (RCTs), have been conducted in developed and developing countries on first responders undergoing different types of therapies such as EMDR and CBT, for example, Gersons, Carlier, Lamberts and

van der Kolk (2000), in Amsterdam; Difede et al. (2007) in New York City, and Jarero, Amaya, Givaudan and Miranda (2013) in Mexico. (Haugen, Evces, & Weiss, 2012) have called for more RCTs to be conducted on first responders to develop sufficient literature and evidence-based recommendations for first responders, while Cukor, Spitalnick, Difede, Rizzo and Rothbaum (2009) recommend finding alternative treatments which can reduce drop-out rates and treatment failures.

Firefighters in Saudi Arabia who are also first responders have been suffering from diverse problems associated with their work environment and cultural issues as well as a lack of psychological trauma care (Koenig et al., 2014). It is necessary to conduct further empirical study to support firefighters in Saudi Arabia because most studies have been conducted in other countries such as the US and Mexico and provide evidence for effective interventions in this context. There are particular cultural and religious customs that need to be taken into account when identifying an effective mental health intervention for Saudi firefighters. The purpose of this thesis is therefore to investigate trauma events and trauma-related symptoms among Saudi firefighters, and to examine the association between such incidents and different factors including: depression, anxiety, coping strategies, and social support. The qualitative study aimed to explore the life story details of each individual to inform the narrative intervention study. The RCT study was conducted to identify the effectiveness of NET in reducing PTSD symptoms among Saudi firefighters and improve their coping strategies. This research can contribute

to a wider dissemination of psychological services, that is, in developing countries, with the aim of enhancing the resilience of first responders in developing countries.

## ***1.2 Post-traumatic stress disorders (PTSD)***

### **1.2.1 Overview and the diagnostic criteria of PTSD**

From a historical perspective, Post-traumatic Stress Disorder (PTSD) was introduced as a recognised disorder in the Diagnostic and Statistical Manual of Mental Disorders (*DSM-III*) in 1980 (APA, 1980). It made its first appearance in the International Classification of Diseases (*ICD.9*) in 1979 (Turnbull, 1998). PTSD was developed as a consequence of a long series of changes, not only in the definition but also in the content.

During the American Civil War, in the 1860s, certain symptoms triggered by stress or anxiety were being diagnosed as shell shock or 'neurasthenia', such as hyper-vigilance and nightmares (Charles 1982). Such symptoms were also known as 'soldier's heart'. In the nineteenth century, Sigmund Freud argued that 'neurosis' was a result of childhood trauma. The PTSD diagnosis resulted from efforts to re-introduce war neurosis into official psychiatric nomenclature (Scott, 1990).

PTSD can arise following a traumatic event, including a threat of injury or death (Robjant & Fazel, 2010). Traumatic events that stimulate feelings of intense fear, horror or helplessness and which could lead to PTSD include: military combat, genocide, natural disasters, witnessing dead bodies, rape and sexual abuse, and motor vehicle accidents (Yehuda, 2002). Yet not everyone

who experiences a traumatic event manifests PTSD. The term is limited to those who have severe problems following the event. Hunt and McHale (2010) define PTSD as a part of the array of reactions of people who experience a traumatic event. Thus, the traumatic event is the first criterion of diagnosis in the DSM.

This research was conducted before the DSM 5 was released in May 2013 (APA, 2013). Therefore, DSM-IV-TR criteria have been applied in this research. In addition, some potential implication should be taken into consideration such as the changing rate of PTSD symptoms and the impact of criteria changes.

PTSD is categorised as one of the anxiety disorders. According to the DSM-IV-TR (APA, 2002), there are 17 PTSD symptoms which are divided into three separate clusters. The three PTSD symptom clusters, and the specific symptoms that make up each cluster, are as follows. Firstly, intrusion, referring to persistent re-experience of the traumatic event in one or more of the following ways: recurrent distressing dreams, recurrent recollections, dissociative reactions, intense cue-sensitivity, and marked physiological reactivity to reminders of the traumatic event. Secondly, avoidance, referring to persistent avoidance of stimuli linked with the traumatic event in one or more of the following ways: avoiding thoughts, avoiding activities and physical sensations, inability to recall, diminished interest, detachment, restricted affect, and a sense of a foreshortened future. The third cluster is hyper-arousal, referring to persistent increased arousal in two or more of the

following ways: irritability, difficulty sleeping, difficulty concentrating, exaggerated startle response, and hyper-vigilance. To be diagnosed with PTSD, a person need only have a certain number of symptoms from each cluster.

According to DSM-IV, the criteria for PTSD include the following: Criterion A: the person has been exposed to a traumatic event in which both of the following were present. (A1) The person experienced, witnessed, or was confronted with an event that threatened death or serious injury, or a threat of physical integrity of the self or other; (A2) the response of the person involved intense fear, helplessness, or horror. Criterion B: the traumatic event is persistently one or more of the re-experience cluster items above. Criterion C: Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma) as indicated by three (or more) of the avoidance cluster items. Criterion D: Persistent symptoms of increased arousal (not present before the trauma) as indicated by two (or more) of the arousal cluster items. Criterion E: Period of the disturbance (symptoms in Criteria B, C, and D) is more than one month. Criterion F: The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning (APA, 2002).

PTSD is not without controversy as it can be accused of psychopathologising normal events as well as comorbidity and treatment. Criterion A can be criticised for being insufficient, and PTSD symptom can be criticised for overlapping with other disorders (Brewin, Lanius, Novac, Schnyder, & Galea,

2009). However, the diagnostic category of PTSD can be useful for people who need of treatment for traumatic stress, and it can help them to understand their responses to a traumatic event (Zang, 2013). It has also been an effective heuristic, producing a great deal of research internationally.

There has been a critical debate about PTSD from the perspective of cross-cultural psychology and medical anthropology, particularly with respect to asylum seekers, refugees and political torture victims from Eastern cultures and regions. Some clinicians argue that PTSD has typically been diagnosed by clinicians from Western nations working with patients from a similar background. Nevertheless, this diagnosis does not accurately reflect the clinical picture of traumatized individuals from non-Western cultures. It is clear that PTSD is a valid diagnosis cross-culturally (Hinton & Lewis-Fernández, 2011). However, there is important cross-cultural variation and the expression of PTSD might be different in different cultural settings and countries, even when DSM-5 diagnostic criteria are met (Marsella, Friedman, & Spain, 1996).

The introduction of the notion of PTSD has led to increasing medicalisation of the problem. Nowadays, the predominant view in psychiatric publications is that PTSD is a medical disorder, characterised by a particular psychobiological dysfunction. Even though the question of what constitutes a medical disorder is still debated (Sadler, Wiggins, & Schwartz, 1994; Dan J Stein, 1991), the identification of both psychobiological dysfunctions and medical interventions that can reverse dysfunctions provides an important basis for legitimising the medicalization of a disorder (Dan, Seedat, Iversen, & Wessely, 2007). Several

kinds of research provided significant impetus to the argument that PTSD is a medical disorder that is characterised. For example, specific factors were found which can predict vulnerability and resilience after exposure to trauma such as genetic variation and severity and duration of the trauma (Armenian et al., 2002; Yehuda, 2004). There is also some evidence that PTSD is characterised by particular psychobiological changes. Structural and functional brain imaging have, for example, suggested reduced hippocampal volumes in patients with PTSD (Kitayama, Vaccarino, Kutner, Weiss, & Bremner, 2005).

However, a model focused on psychobiological dysfunction in PTSD may deflect attention away from important socio-political efforts to prevent violence and a variety of potentially useful, non-medical interventions to relieve distress after trauma (Dan et al., 2007).

The studies in this research reviewed and identified all relevant published studies on PTSD. All trauma studies associated with first responders and emergency workers were also reviewed. Firstly, the systematic review and meta-analysis studies focused on PTSD symptoms, risk and protective factors, treating PTSD in general and in first responders were included. Second, studies which have examined the prevalence rate of PTSD, the correlation between PTSD, depression, anxiety, coping strategies, and social support as well as demographic variables such as age, years of service and education were also included in this study. Third, meta-analysis and systematic review PTSD treatment studies are reviewed and relevant studies are presented in

the final section of this study. Then, randomised control trial (RCTs) studies for treating PTSD in first responders were discussed. The effectiveness of NET studies has been demonstrated and is discussed within several RCTs at the end.

A search strategy was used to identify all relevant published studies conducted by using online databases including MEDLINE, EMBASE, PubMed and PsycINFO. All these studies will be presented and discussed in the following sections in this literature review.

### **1.2.2 Risk and protective factors for PTSD**

Risk factors for PTSD may be divided into those that are more 'external' to participants and those that are more cognitive and emotional in origin, although there is an inevitable overlap between the two. There is a wide range of evidence which has indicated that some variables are considered to be risk factors for PTSD.

A meta-analysis of risk factors of PTSD has been conducted on 77 studies since 1980 by Brewin, Andrews and Valentine (2000). The result presented that there were five demographic risk factors (gender, age, low socioeconomic status, low education and race) and nine other factors of which psychiatric history, childhood abuse, other trauma, other adverse childhood, family psychiatric history, trauma severity, lack of social support, and life stress were predicted PTSD in these studies.

Another meta-analysis study was conducted on 68 studies between 1980 (the year PTSD was first included in the DSM) and 2000. The result showed seven predictor factors of PTSD in adult (ages 18 and over). The factors were prior trauma, prior psychological adjustment, a family history of psychopathology, perceived life threat during the trauma, post trauma social support, per-traumatic emotional responses, and peri-traumatic dissociation. The results also suggested that per-traumatic psychological processes are the strongest predictors of PTSD rather than prior characteristics (Ozer, Best, Lipsey, & Weiss, 2008).

A meta-analysis study was conducted across 64 studies published between 1980 and May 2009. This meta-analysis involved assessing the population effect sizes of 25 potential risk factors for PTSD in children and adolescents aged 6–18 years. The result showed a medium to large effect size for low social support, per-trauma fear, perceived life threat, social withdrawal, comorbid psychological problems, poor family functioning, distraction, PTSD at Time 1, and thought suppression factors. Small to medium effect size was observed for female gender, low intelligence, pre and post-trauma life events, pre-trauma psychological problems in the individual and parent, pre-trauma low self-esteem, post-trauma parental psychological problems, bereavement, time post-trauma (an inverse relationship), trauma severity, and exposure to the event by media; whereas small effect size was observed for race and younger age as risk factors for PTSD (Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012).

A later systematic review study of pre trauma risk factors of PTSD's etiology was conducted on 54 prospective, longitudinal studies of PTSD published between 1991 and 2013. Six categories of premorbid predictors of PTSD reviewed in this study include: cognitive abilities; coping and response styles; personality factors; psychopathology; psychophysiological factors; and social ecological factors (e.g. family of origin, social support, poverty). The results showed that many variables, previously considered outcomes of trauma, are most likely risk factors for PTSD. In addition, the result suggested that symptoms of PTSD are not symptoms of an index trauma; however they may play a fundamental role in its etiology (DiGangi et al., 2013).

It has been found that people who have experienced trauma previously without developing PTSD symptoms have a lower probability of developing PTSD upon exposure to new traumatic events compared with those who had a trauma history associated with a prior occurrence of PTSD (Breslau, Peterson, & Schultz, 2008). Similarly, other studies suggest that encountering multiple traumatic events might contribute to the development of effective coping strategies among firefighters, resulting in less negative experiences (Bryant, Sutherland, & Guthrie, 2007; Del Ben et al., 2006). Consequently, an intervention programme makes it possible for people to reduce their PTSD symptoms and develop coping mechanism for the later experiences. It may be concluded that people who are able to manage their traumatic experience effectively and avoid developing PTSD symptoms may be more likely to

manage later traumas. Further, several studies suggest that positive coping skills are essential to preventing the aftermath of traumatic events.

From the above studies, it may be concluded that a wide range of variables can be risk factors for PTSD and can affect the onset, maintenance, and severity of PTSD symptoms. Correspondingly, reactions to and symptoms of trauma can be wide and varied. Firefighters who experience traumatic events may experience one or several symptoms, which may or may not meet the criteria for PTSD. Thus, PTSD is a limited disorder that does not take into account the full range of problems associated with trauma. The severity of the symptoms depends on individual coping skills, the type of trauma involved, and the emotional support that the affected person receives from others. Interestingly, multiple traumas may contribute to the development of useful coping strategies among firefighters (Del Ben et al., 2006). Even though some firefighters may recover on their own, others will need to access mental healthcare programmes to assist their recovery.

These different findings across the previous studies might be related to the sample size, the type of research participant, namely, firefighters only or a mix of other emergency responders, design of the studies such as longitudinal or cross-sectional design and the nature of PTSD, anxiety and depression measures.

### **1.2.2.1 Traumatic events**

Screening the experience of being exposed to traumatic events is the first step in diagnosing PTSD; this step can be considered the first criteria with two sub-

criteria. Criterion A is that the person is exposed a traumatic event; criterion B is that they report experiencing intense fear, horror or helplessness associated with the traumatic event (APA, 1994) . For instance, to examine a role of trauma in bringing about PTSD symptoms, (Pearce, Schauer, Garfield, Ohlde, & Patterson, 1985) evaluated three groups of participants. The first group had experienced a traumatic event related to war; the second group had experienced a traumatic event unrelated to war; while the last group had not experienced a traumatic event. The results showed that groups who experienced traumatic events reported significantly more PTSD symptoms than the group that had not experienced traumatic events. Moreover, the first group who had experienced traumatic events related to a war reported more symptoms than group who experienced non-war-related traumatic events. This suggests that the war traumas are more responsible for activating fear, horror and helplessness than other events, and these results support the validity of the PTSD construct (Pearce et al., 1985).

Another way of categorising victims is to divide them into two groups according to the nature of the trauma exposure. In the first group, victims have been directly involved in an event which threatened their lives or physical integrity. In the second group, victims have been exposed indirectly to the traumatic events such as sudden loss or injury to a loved one. For example, parents, children, spouses, friends, colleagues, and rescue personnel and helpers such as firefighters could be victims, but indirectly (Saari, 2005). On the other hand, Spitzer, First and Wakefield (2007) suggest that a victim is

only someone who directly exposed to or witnesses a traumatic event, as per criterion A. They suggest that some event such as hearing that a loved one has died should not be considered as traumatic event. Whereas some events can be considered as a traumatic events in one culture, the same events may not be considered as a traumatic event in another culture or by another person in the same culture (Jaber, 2012).

With regard to the type and severity of traumatic events, Corneil et al. (1999) argue that differences in the frequency and type of traumatic-incident exposures may be potential risk factors associated with recognised differences in post-trauma symptoms. Similarly, Angleman (2010) found that exposure to unusually traumatic experiences such as multiple traumatic events in emergency services can lead to a considerable increase in emotions.

Relatedly, a study was conducted in a sample of 58 men by Graham-Howard (1993) to assess the relationship between multiple traumas and the development of PTSD symptoms. The results revealed that there is a significant positive correlation between exposure to multiple events, whether direct or indirect, and PTSD-symptom intensity. In addition, the PTSD symptoms can be predicted by the number of traumatic events that are experienced (Rogers, 1995).

Traumatic events experienced by children can also predict PTSD symptoms. Kilbourn (1993) suggests that war-related traumatic events that children experience can increase the prediction of PTSD scores. Another study found that severe, sudden stresses that occur during childhood are likely to

precipitate the development of trauma disorder (Kolk et al., 2009), and complex PTSD (Ford & Courtois, 2009).

Previous trauma history could play a significant role in the development of PTSD. For instance, Breslau, Chilcoat, Kessler and Davis (1999) reported that multiple previous traumatic events in childhood are associated with higher risk of PTSD in adulthood compared with a single event in childhood, especially assaultive violence. This finding is corroborated by Maercker, Michael, Fehm, Becker and Margraf (2004), who found that, out of a sample of 1,966 aged 18-45, 25% met the DSM PTSD Criterion A1 (injury experienced by a family member or other close associate explained in more detail below), and 70% of those who developed PTSD had childhood risks compared to 13% who had adolescent risks.

According to Breslau, Davis and Andreski (1995), a history of trauma can affect the development of PTSD symptoms and increase reported exposure to new traumatic events, due to feelings of helplessness arising from the previous traumatic event. Therefore, later events might be considered to be traumatic by traumatised people, regardless of their actual effect. Such individuals may find it difficult to distinguish between traumatic events and stressful events. Those whose natural work environment exposes them repeatedly to traumatic events are particularly likely to be vulnerable to PTSD and new traumas, especially when they do not receive an appropriate intervention.

Multiple traumatic-event exposure plays a predictive role not only for PTSD symptoms but also for other mental disorders and outcomes among

firefighters, such as depression, substance use, and low job satisfaction (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kimbrel, 2011; Malek, Fahrudin, Kamil, & Shafinaz, 2009). Therefore, any effective intervention programme should take this comorbidity into consideration.

### **1.2.2.2 Coping strategies**

The transactional perspective is the origin of the cognitive theory of stress and coping, which takes into consideration the dynamic, mutually reciprocal, bidirectional relationship between the person and the environment (Tuna, 2003). According to Folkman, Lazarus, Gruen, and DeLongis (1986), coping may be divided into two processes, namely, cognitive appraisal and coping. These are thought to be the critical mediators of a stressful relationship between the person and environment, as well as of immediate and long-term outcomes.

The first process, cognitive appraisal, can in turn be divided into two processes: primary and secondary appraisal (Folkman & Lazarus, 1985). In primary appraisal, the person evaluates the experienced incident as stressful or not. If it is stressful, the person considers their coping resources for responding to the stressful incident, and this comprises the secondary appraisal process. Folkman (1984) contends that the type of coping used depends on the level to which the stressful event feels under the person's control. The capabilities and skills that the person already possesses might affect their evaluation of the event and the extent to which it is under their control or not.

The second process of Lazarus and Folkman's (1984) stress and coping theory is coping, defined as "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141).

Coping strategies have in turn been categorised by Folkman (1984) into two types, namely: problem-focused coping (PF) and emotion-focused coping (EF).

In problem-focused strategies, thoughts and behaviours are directed towards actively coping with the stressful situation, whereas emotion-focused strategies entail various skills include wishful thinking, emphasising the positive, distancing, self-blame, tension-reduction, seeking social support, and self-isolation. In another classification, Holahan, Moos, and Schaefer (1996) divide coping strategies into approach and avoidance coping strategies.

Approach coping includes positive reappraisal, taking problem-solving actions, logical analysis, and seeking guidance and support. In contrast, avoidance coping strategies involve resigned acceptance, seeking alternative rewards, cognitive avoidance, and emotional discharge. Jorgensen and Dusek (1990) classified coping strategies according to how beneficial they are. The most beneficial strategies were making decisions, chatting about problems with family, and seeking social support, while the less beneficial strategies were verbal aggression, alcohol use, and minimising the importance of the problem.

Different ways of categorising coping strategies have been highlighted previously. The focus in this thesis, however, is with those coping strategies

used by emergency workers and their relationship with post-traumatic stress effects.

There are numerous theoretical and methodological difficulties in studying the coping responses of emergency workers (Beaton et al., 1999). The demands of the occupation are relatively unusual, and measuring coping strategies needs to reflect exposure to trauma and their duty-related tasks, as well as their rescue roles (McCammon, Durham, Allison Jr, & Williamson, 1988). Moreover, because emergency workers are self-selected, they may not be representative of the general population in terms of their coping strategies nor their personalities (Mitchell & Bray, 1990). Previous research on the coping strategies of emergency workers has been based on reactions to particular events such as a disastrous tornado (McCammon et al., 1988), earthquake (Marmar et al., 1996), or an avalanche (Johnsen, Eid, Løvstad, & Michelsen, 1997). Some have debated whether coping processes are part of the unconscious, and hence inaccessible and/or unknown to self; this is another reason why it is difficult to assess self-report measurements (Horowitz & Wilner, 1980).

The relationship between firefighters' use of coping strategies and the aftermath of traumatic events has been investigated in several studies. In a cross-sectional study among 248 male firefighters (Brown, Mulhern, & Joseph, 2002), it was found that avoidance coping was associated with post-traumatic stress symptoms in firefighters. Similarly, another study examined the relationship between coping strategies and PTSD in 84 firefighters who had

been exposed to earthquake rescue work five months after the event (Chang et al., 2003). They found that avoidance coping strategies were significantly associated with PTSD. A comparative study was conducted by (Chamberlin, 2010) to compare psychological distress and coping strategies for three different firefighter groups in Australia: recruits (n=42), on-shift firefighters (n=51), and firefighters who had recently attended one of 13 fatal incidents (n=52). The results showed that both active and passive coping strategies are associated with PTSD. Moreover, a longitudinal study was conducted by Beaton, Murphy, Johnson, Pike, and Corneil (1999) to assess coping responses and PTSD in 220 urban firefighters. The results revealed that the cognitive behavioural strategies of avoidance and numbing are associated with PTSD. In contrast, Brown et al. (2002) point out that the increasing use of strategies such as task-focused coping is associated with lower levels of distress than emotion-focused coping strategies. Another study examined the reactions of 747 firefighters. The results indicated more positive than negative responses after stressful tasks, but firefighters who used suppression coping reported a less positive reaction than others (Moran & Colless, 1995).

In addition, there is evidence which suggests that coping strategies might be a significant factor in protecting against the development of PTSD in firefighters. Beaton et al. (1999) examined coping responses and PTSD for 220 firefighters. The results showed that coping characterised by avoidance and numbing predicted PTSD symptoms at a 6-month follow-up. Another study was conducted by Armstrong, Shakespeare-Finch, and Shochet (2014) to

investigate PTSD and post-traumatic growth among 218 firefighters. The results indicated that cognitive reappraisal coping significantly predicted PTSD symptoms. On the other hand, a study by (Meyer et al., 2012) to assess the predictors of PTSD in 142 trauma-exposure firefighters found that 'seeking support from others' seemed not to be a significant protective factor for PTSD.

The health of individuals before the traumatic event may affect their ability to use coping strategies. In a two-year prospective follow-up study, Heinrichs (2005) found that a low rate of PTSD prevalence is generally related to the health of individuals before exposure to the traumatic incident. Furthermore, firefighters with high-level hostility and low self-efficacy scores have the greatest likelihood of increasing not only the PTSD rate but also all psychopathological symptoms. In contrast, Schnyder (2001) found that biological characteristics do not predict the prevalence rate of PTSD. Bryant and Guthrie (2005) administered the Clinician-Administered PTSD Scale (CAPS), a 30-item structured interview that corresponds to the DSM-IV criteria for PTSD, to 82 firefighters during training and before trauma exposure; 68 of these were re-assessed 20 months later, after trauma exposure. Results suggest that no one in the first or second assessment met the criteria for PTSD. However, they found that a significant factor predicting PTSD symptoms is catastrophic thinking in participants prior to trauma exposure. Those firefighters who displayed maladaptive appraisals about themselves were also highly likely to experience PTSD symptoms. These findings suggest that the

interpretations that firefighters make about themselves and their responsibility in a trauma event significantly affect the way in which they adapt to the experience. This finding is supported by Andrews, Brewin, Rose and Kirk (2000) who found that attributions of shame in the acute phase after trauma exposure can predict PTSD. This finding is consistent with that of McNally, Bryant and Ehlers (2003) who found that an essential predictor of a subsequent stress reaction is how people think and interpret the meaning of stress symptoms. For example, in an Australian study, Bryant and Guthrie (2007) controlled for a history of potentially traumatic events and pre-existing stress reactions in a sample of 68 firefighters. Their key finding was that participants' negative appraisals about themselves accounted for almost 20% of the prevalence of PTSD severity four years later. Other studies have examined the notion that impaired retrieval of specific autobiographical memories is a risk factor for psychological disorders after trauma-exposure (Bryant et al., 2007). Bryant et al. (2007) found that deficits in the restoration and retrieval of certain memories before trauma-exposure were connected with PTSD after trauma-exposure. A weakness of this study is that it did not measure intelligence. There is evidence that intelligence factors moderate the relationship between the specific retrieval of memories (Wessel, Merckelbach, & Dekkers, 2002) and post-traumatic adjustment (Macklin et al., 1998).

Antonovsky (1979) introduced the concept of 'sense of coherence', claiming that the way in which people view their life has a positive or negative

influence on their health. Sense of Coherence (SOC) explains why people in stressful situations stay well and are even able to improve their health (Lindström & Eriksson, 2006). Relatedly, there are two theories which attempt to explain the process of PTSD development by information dissonance: one by Horowitz (1997) and one by Foa and Rothbaum (1998). In a study of Polish firefighters, Dudek and Szymczak (2011) aimed to verify these theories via cross-sectional and longitudinal studies, measuring SOC using the Polish adaptation of the 'Orientation to Life Questionnaire' by Antonovsky (1979). The study based on a cross-sectional design was conducted on 974 Polish firefighters while the study using a longitudinal protocol was conducted on 833 police officers. Results showed that PTSD symptoms developed in the low and high SOC subjects more than in the medium SOC subjects. Significantly, they found that the process of obtaining information about the traumatic situation and coping can be influenced by SOC. This finding highlighted the important of coping skills and knowledge in the time of the event which may improve the ability to evaluate this event and cope with it. However, this study focused not only on firefighters but also on police officers which means that the sample was mixed and cannot necessarily be compared to samples of firefighters only.

Interestingly, the interaction between coping strategies such as self-blame and social support can play significant role in predicting PTSD among firefighters. Meyer et al. (2012) studied the interaction between perceived availability of social support and the coping strategy of self-blame. The results

suggest that participants low in social support and high in self-blame accounted for the unique variance in self-reported PTSD. Similarly, Guay, Billette, & Marchand (2006) found that participants low in social support and high in self-blame may be at an elevated risk for PTSD symptoms.

Overall, most previous studies have found that passive coping strategies such as avoidance, numbing, and seeking support are associated significantly with PTSD symptoms, although there are variances among these studies in terms of the design, methodology, and the assessment tools. In some cases, coping strategies were predictive of PTSD symptoms. In addition, the interaction between coping strategies and social support has been highlighted in some cases. It may be concluded that an intervention programme should include the development of active coping strategies which can help traumatised participants to prevent and reduce trauma-related symptoms.

### **1.2.2.3 Social support**

Social support is defined as information which can lead the individual to believe that they are cared and loved for, esteemed, and a member of a network of communication and mutual obligation (Cobb, 1976). This information should play a significant role in fulfilling an individual's social needs and minimising the negative impact of stressors. Social support resources such as family, friends, organisations, and the community have been studied by Billings and Moos (1981). Their results confirm that the quality of support resources has an important effect on stress.

Three sides of social support should be evaluated: perceived support, satisfaction with perceived support, and network rewards (Sandler & Barrera, 1984). Vaux (1988) argues that three elements of social support should be assessed. The first element is the range of socially supportive relationships. In this element, three levels of relationship have been examined, namely: a) social integration factors such as marital status, family and friend contact, and membership of a voluntary organisation; b) The extent to which intimate relationships are available; and c) social networks such as workplace, neighbourhoods, and non-government organisations. The second element is the actual and perceived types of support, while the third element is focused on forms of socially supportive activities, roles of support, the empirically created forms of helping, and reviews of support typologies. Moreover, Bruglia (1995) reported that three aspects of social support should be considered when support is being assessed. The first is the support type including the amount of support and satisfaction. The second is sources of social support such as family, friends, and organisations. The final aspect is the functions of support, for instance, emotional and instrumental support.

Overall, three aspects of social support should be taken into consideration when measuring social support: firstly, sources of support such as family, friends, and organisations; secondly, the support function, whether emotional, instrumental, or information support and the satisfaction derived from the support; finally, whether the support is received or perceived.

One of the multiple factors found to mediate distress in response to traumatic exposure is social support. Higher levels of social support are found to be associated with a lower degree of PTSD symptoms and depression (Regehr, 2009).

#### 1.2.2.3.1 Social support and trauma

In rescue workers, the perceived social support of organisations, especially from superiors, has been found influence responses to traumatic incidents. For example, the psychological responses of two firefighter groups were examined by Fullerton, McCarroll, Ursano, and Wright (1992). One group was participating in a mass-causality air disaster rescue in Sioux City, Iowa in the US; the other was a special firefighters unit performing rescue missions in New York City. Many of the firefighters in both groups reported that support from fellow workers in decision-making was particularly important. Similarly, Alexander and Wells (1991) found that good team relationships, backed up by discreet professional support from the organisation, can be powerful solutions to traumatic experiences. Another study was conducted to predict symptomatic distress in emergency services workers. The results showed that social support is significantly related to most indices of symptomatic distress (Weiss, Marmar, Metzler, & Ronfeldt, 1995).

Accordingly, when emergency workers have been supported and they feel are valued, they tend to experience lower levels of distress. In contrast, the studies mentioned above are clear that support within organisations is not universal.

Relatedly, the impact of highly stressful work on emergency responders such as firefighters can be reduced by the support of family and friends. Several studies were conducted on emergency service personnel; it was found that the social support of others was significantly negatively associated with trauma symptoms and depression (Barram, 1999; Huynh, Xanthopoulou, & Winefield, 2013). The mediator role of social support between traumatic events and PTSD has been investigated in a Canadian study by Regehr, Hill, Knott, and Sault (2003a). This study compared new firefighter recruits in the first week of employment and following a 10-week training period with a group of experienced firefighters. Results suggested that social support and experience on the job were the significant factors in predicting both PTSD and depression, worryingly with experienced firefighters having lower levels of social support and lower self-efficacy than the new recruits.

Dudek and Szymczak (2011) also addressed social support. The level of PTSD was assessed using the Questionnaire for PTSD Measurement (K-TSD) while sense of coherence (SOC) was measured using the Polish adaptation of the 'Orientation to Life Questionnaire' by Antonovsky. Results showed that social support was a significant factor and more effective than coping strategies in dealing with the traumatic events experienced by firefighters. A significant point about high SOC is that people tend to tell others about the trauma and this makes it possible for them to recover more quickly from the trauma.

However, the explanation of the relationship between SOC and PTSD was not clear. Therefore, the Foa theory of emotional processing can be applied to

explain the direct relationship between SOC and PTSD. Repeated reliving prevents avoidance of the trauma memory which promotes the habituation of fear, and offers opportunities to experience the self as showing mastery and courage in the face of challenge. By reflecting on events in detail, patient generates a more organised memory record that is easier to integrate with the rest of the memory system (Foa & Rothbaum, 1998). Similarly, Mitani et al. (2006) assessed the impact of post-traumatic stress disorder and job-related stress on burnout in 243 fire service workers in Japan, using the Impact of Event Scale-Revised (IES-R), the Japan Brief Job Stress Questionnaire and the Maslach Burnout Inventory (MBI). Results showed that social support and human relationships in the work place were valuable in reducing not only PTSD symptoms but also chronic and acute stress. A US study by Smith (2011) also assessed the relationship between social support and PTSD. In 124 urban firefighters, they found social support was associated to fewer depressive symptoms and firefighter stress was correlated to more PTSD symptoms and alcohol problems.

Fear of emotion was explored as a moderator variable between PTSD and firefighter social interactions in a U.S. study by Foa and Rothbaum (2011). They sought to examine how beliefs about emotion interact with social interactions to affect PTSD in 225 firefighters. Results demonstrated that fear of emotion was a significant individual predictor of PTSD. Moreover, fear of emotion emerged as a moderator between social interactions and PTSD. This study suggested some treatments for PTSD such as cognitive processing

therapy and prolonged exposure therapy. However, a cross-sectional study is unable to detect changes in variable associations over time, therefore a longitudinal study should be conducted (Farnsworth & Sewell, 2011).

It should also be noted that family members are not immune from the mental health problems and stresses encountered by their loved ones who work in the line of fire (Regehr, 2009). Twenty-seven wives of firefighters were interviewed after the 1995 Oklahoma City bombing. The results showed that half of them reported PTSD symptoms, and 37% reported permanent changes in the relationship as consequence of the bombing, while 7% reported temporary changes. It may be inferred that the strength of social support that firefighters receive is negatively affected by their family members who suffer PTSD or other undesirable symptoms.

#### **1.2.2.4 Comorbidity and PTSD**

Other common disorders and outcomes such as anxiety, depression, substance use, and poor job satisfaction could be comorbid with PTSD. A longitudinal comparison study for rescue and disaster workers exposed to trauma (N=207) and workers unexposed to trauma (N=421) was conducted to examine the incidence of depression and other psychological disorders at 2, 7, and 13 months (Fullerton, Ursano, & Wang, 2004). The results showed that 'exposed' disaster workers had significantly higher depression at 7 and 13 months than did 'non-exposed' workers. Furthermore, Chiu et al. (2011) conducted a study between 2005 and 2007 identifying unique risk factors for understanding comorbidity of symptoms among 1,915 firefighters in a fire

department of City of New York after the World Trade Centre attacks. The results were positive for elevated depression and PTSD symptoms. The results also highlighted that when comorbidity was controlled for; there were unique risk factors for depression, namely alcohol abuse. Similarly, a study was conducted to examine contributing factors to PTSD in 112 firefighters. The results revealed that depression and other problems such as alcoholism are likely to develop among firefighters (Carey, Al-Zaiti, Dean, L. Sessanna, & Finnell, 2011).

In addition, a study in a representative national sample of 5877 people with ages ranging from 15-54, it was found that PTSD symptoms are frequently comorbid with other psychiatric conditions such as anxiety, depression, and substance abuse (Kessler et al., 1995).

Additionally, the comorbidity of PTSD, depression and anxiety were found in previous studies, ranging between 21% and 94%, suffering from comorbid depression (Ginzburg, 2006; Hashemian et al., 2006; Sundquist, Johansson, DeMarinis, Johansson, & Sundquist, 2005), and 39–97% suffer from co-morbid anxiety (Ginzburg, 2006; Hashemian et al., 2006; Zayfert, Becker, Unger, & Shearer, 2002) and 11–67% endorsing a triple-comorbidity, namely having anxiety and depression in addition to the PTSD symptoms (Brady & Clary, 2003; Hashemian et al., 2006). In order to understand which symptoms can appear before each other, one study highlighted those individuals who suffer from both PTSD and depression symptoms, in most cases depression onset precede PTSD onset (O'Toole, Marshall, Schureck, & Dobson, 1998). On the

other hand, some studies found that in most cases, anxiety and depression were secondary to PTSD symptoms (Engdahl, Dikel, Eberly, & Blank Jr, 2014; Franko et al., 2005). Finally, some previous studies observed comorbidity is merely an artefact of symptom overlap (Brewin et al., 2009; Franklin & Zimmerman, 2001; Southwick, Yehuda, & Giller, 1991).

Disorders such as depression, anxiety, and other mental disorders seem more likely to occur in conjunction with PTSD. The finding across the previous studies might be an artefact of the selection of sample size, the type of research participant, design of the studies such as longitudinal or cross-sectional design and the nature of PTSD, anxiety and depression measures.

In the context of Germany, a study was conducted to examine PTSD symptoms and comorbid symptoms among 402 firefighters. The results showed that depressive mood and substance abuse developed as a result of traumatic stress among firefighters (Dieter Wagner, Heinrichs, & Ehlert, 1998). Furthermore, Kimbrel (2011) found that job stress among firefighters is likely to increase PTSD symptoms, depression and substance use.

Job satisfaction may also be a comorbid variable among firefighters. A study was conducted by Beaton and Murphy (1993) to investigate the sources of stress among 2,000 firefighters. The results revealed that lower job satisfaction is associated with higher job stress and consequently disorders such as PTSD symptoms and depression can develop. Similarly, Malek, Fahrudin, Kamil and Shafinaz (2009) examined the sources of occupational stress and impact on job satisfaction and psychological well-being of 617

firefighters. The result reported that job stress can decrease job satisfaction and increase the risk of PTSD symptoms.

#### **1.2.2.4 PTSD and related factors**

Other risk factors that should be considered for first responders are years of service, education, and shift work. Numerous studies have investigated the relationship between these factors and trauma symptoms for firefighters. A selection of these findings will be highlighted below to give a comprehensive picture of the trauma and risk factors faced by firefighters.

In terms of years of service, a significant association has been found between years of service and psychological measures of distress. A study was conducted to determine the relationship between years of service and scores on a 'burnout' scale in a sample of paramedics and firefighters (n=2,000). The results showed significant positive association between more years of service and the higher burnout scores (Murphy et al., 1994). Comparing urban Canadian and US firefighters, Corneil, Beaton, Murphy, Johnson, and Pike (1999) found that years of service is associated with an increased risk of PTSD symptoms in the urban Canadians, but not in the urban US firefighters. Regehr et al. (2003a) examined trauma in new recruits compared to that in experienced firefighters. They found a significant linear relationship between experience and level of trauma and depression. On the other hand, Beaton et al. (1999) assessed the coping strategies and PTSD symptoms, as well as years of service as a risk factor, in 220 firefighters. They found that years of service in firefighting experience was a significant protective factor against PTSD

symptoms. Similarly, Meyer et al. (2012) assessed predictors of PTSD symptoms in 142 trauma-exposed firefighters. They found that years in firefighting service was not a significant predictor of psychological symptoms. In their comparative study between US (n=203) and Canadian (n=625) firefighters, Corneil et al. (1999) found that 15 years or more of service and work strain had a significantly increased prevalence rate of PTSD among the US firefighters. In contrast, in a study of 102 firefighters in Greece, assessed by self-report, Psarros, Theleritis, Martinaki, and Bergiannaki (2008) found that primarily young and inexperienced firefighters displayed post-traumatic stress symptoms

Thus, while some studies have found that the years of firefighting service increase the likelihood of PTSD symptoms and depression, others found that 'years of service' was not associated with trauma symptoms. In addition, the differing outcome result across the previous studies could be associated with other factors such as sample size or the type of research participant such as firefighters only or a mix of other emergency responders.

Turning to education variables, it has been hypothesised that low levels of education might be associated with poor coping skills, poor insight, and low self-esteem. It is thought that these problems can impair the individuals' capacity to recover from the trauma. Some studies have indeed found support for this hypothesis, arguing that people with lower education and income levels report less active coping and less social support from friends and others; rather they report more passive coping (Dohrenwend, 2000). A meta-

analysis of risk factors for PTSD symptoms following trauma exposure found that a lack of education was a risk factor of PTSD symptoms (Brewin et al., 2000). Similarly, a study was conducted to develop an effective narrative intervention for 120 earthquake survivors in China. It was found that low educational levels were risk factors for PTSD symptoms (Zang, 2013).

In terms of shift work, fire stations require that firefighters work 24-hour shifts in Saudi Arabia and all the world countries, which means that firefighters may work their shifts at different times during the week. Both shift and night work (e.g., daytime/night time) markedly increase psychological problems in firefighters (Åkerstedt, 1988). According to Lusa, Häkkänen, Luukkonen, and Viikari-Juntura (2002), fatigue and sleep disturbance are common among shift workers. Working a nightshift can decrease alertness among firefighters (Paley & Tepas, 1994). The onset of psychological problems due to shift- and night-work adds to the stressful nature of the work – not least because a strain is placed on the time management of firefighters, particularly those who have a family or are studying part-time.

Cultural factors and other characteristics of the community, such as organisational, contextual and marital status, have been discussed by Corneil et al. (1999). They recommend that future research should take these factors into consideration as possible predictors of distress in certain firefighter populations. Angleman (2010) argues that environmental and cultural factors might affect the prevalence rates of PTSD because firefighters may respond differentially according to the area in which they work, for example, urban

and rural areas, and different countries. Therefore, further research should take such factors into account during PTSD assessment. This concludes a discussion of factors which may be categorised as more 'external' to participants. In addition, culture, religion and background knowledge surrounding psychological support should be considered.

### **1.2.3 Theories: Understanding PTSD**

Several theories provided an overview of PTSD such as social-cognitive, conditioning, information-processing, and anxious apprehension models. These early theories of PTSD can be divided into three types. First, social-cognitive theories mainly focus on the way trauma breaches existing mental structures and on innate mechanisms for reconciling incompatible information with previous beliefs (Mardi J Horowitz, 1986). In addition, social cognitive theories provide good explanations of the variety of emotions and beliefs occasioned by trauma and of the process of adjustment, without clearly differentiating between PTSD and other types of reaction such as depression (Brewin & Holmes, 2003).

Second, conditioning theories deal with learned associations and avoidance behaviour (Mowrer, 1960). Moreover, conditioning theories explain how trauma cues acquire the ability to elicit fear and of the critical role played by avoidance. However, these theories are limited by the lack of cognitive elements in explaining many of the symptoms concerning PTSD, especially those dealing with beliefs and perceived threat (Brewin & Holmes, 2003).

Third, information-processing theories focused on the encoding, storage, and recall of fear-inducing events and their associated stimuli and responses (Chemtob, Roitblat, Hamada, Carlson, & Twentyman, 1988; Foa, Steketee, & Rothbaum, 1989; Litz & Keane, 1989). Furthermore, these theories offered an explanations of the cognitive architecture by which the traumatic event may be represented, of effects on attention, and of how the overturning of assumptions increases the number of potential trauma reminders. However, these theories are less able to take into consideration the importance of emotions other than fear and of beliefs extending beyond issues of danger to the wider social context (Brewin & Holmes, 2003). All these early theories were restricted by the small amount of published research on trauma, memory, and PTSD available at that time.

The amount of research on PTSD has increased considerably in recent years. Specifically, clinical researchers have developed several theories concerning treatment of PTSD. According to Brewin and Holmes's (2003) review, three main theories of PTSD have been identified from different points of view as having the most explanatory power. They are based on current experimental findings and observed clinical symptoms in patients.

### **1.2.3.1 Emotional Processing Theory**

Developed by Foa and Rothbaum (1998), this theory is based on cognitive-behavioural principles, including the assumption that cognitions play a significant role in the development and maintenance of emotional and behavioural responses to life situations. One of their contributions was to

interpret the association between PTSD and knowledge available before, during and after the trauma. Another was their argument that increased emphasis on negative appraisals of the trauma and/or its sequelae may produce serious current threat, which is critical to persistent PTSD. However, this theory is still insufficiently flexible in explaining contradictory phenomena. Emotional processing theory has a great deal of explanatory power and is extremely comprehensive. This theory draws attention to many of the significant aspects of PTSD that are possible to be encountered within therapy and offers various valuable suggestions to clinicians about how to conceptualize these. For instance, the observation that the rigidity of beliefs may be problematic, regardless of whether the content of beliefs is positive or negative is potentially highly important. The increased emphasis on pre-trauma risk factors and appraisal processes has been supported by research examining the relation of a successful outcome of exposure treatment with the initial activation of fear (Foa & Rothbaum, 1998; Jaycox, Foa, & Morral, 1998). Nevertheless, the status of other aspects of the theory is less well established, specifically the hypothesized mechanisms of change. Associative network models have also been criticised for being too simple to capture complex clinical phenomena (Power & Champion, 1986; Teasdale & Barnard, 1995). Nevertheless, emotional processing theory is associated to a detailed outline of therapeutic procedure, and also offers a sophisticated account of the various mechanisms that may underlie the success of treatment using prolonged exposure.

### 1.2.3.2 Dual Representation Theory

The Dual Representation Theory is an alternative theory that focuses on memory, emotion and appraisal. Developed by Brewin, Dalgleish and Joseph (1996), it attempts to explain how trauma memories disassociate from the ordinary memory system. According to this theory, flashbacks arise when trauma memories become dissociated from the ordinary memory system, while recovery involves transforming traumatic memories into ordinary or narrative memories. The theory holds that the memory has two systems, both of which work in parallel although one might take priority over the other at certain times. The first is called the verbally accessible memory (VAM) system, which accounts for voluntary memories, while the latter is referred to as the situationally accessible memory (SAM) system (Banerjea, Findley, Smith, Findley, & Sambamoorthi), which accounts for involuntary memories and primarily represents sensory information and spatial images. The VAM system can be reflected by written or oral narrative memories of a trauma. In contrast, SAMs contain little verbal information and are not readily accessible through conscious means; they are triggered by cues that have become associated with the trauma (Barrett & Ollendick, 2004). After a traumatic experience, individuals may attempt to dissociate from the event by, for example, attempting to distract themselves from memories of this event, primarily to preclude negative mood states. According to Dual Representation Theory, treatment for PTSD involves augmenting and strengthening verbally codeable trauma memories via the deployment of focused attention, so that they can compete for retrieval more effectively with sensory memories.

Empirical evidence exists for only some aspects of this model. A general limitation of studies that follow-up trauma survivors is that the nature of any association between predictor variables (even those assessed shortly after the trauma) and later PTSD symptoms is not unambiguous (Brewin & Holmes, 2003). A useful element of this theory is that it addresses a number of specific observations about PTSD that are difficult to explain under the assumption of a single memory system (Brewin & Holmes, 2003).

The revised version of the dual representation model of PTSD (Brewin, Gregory, Lipton, & Burgess, 2010) specifies in more detail the original explanation of SAM system in terms of a contemporary model of spatial memory and imagery. The revised model suggested that these perceptual memories consist of sensation-near representations (S-reps) that are the product of processing in the dorsal visual stream, insula, and amygdala and that are specialized for action on the environment. S-reps capture the entire visual field, are egocentric (rely on the person's own viewpoint), are automatically activated by related cues, and are relatively inflexible.

The updated model also replaces the concept of VAMs described by Brewin, Dalgleish, and Joseph (1996) by proposing parallel contextualized representations (C-reps) that are the product of processing in the ventral visual stream and medial temporal lobe. C-reps are selective, correspond to the focus of conscious attention, are allocentric (permit the adoption of alternative viewpoints), and can be strategically or automatically retrieved. C-reps support episodic memories and verbal accounts of a traumatic event,

whereas S-reps support involuntary flashbacks. The theory suggests that during a traumatic event the encoding of S-reps is strengthened, whereas the encoding of C-reps, and the connections between S-reps and C-reps, is weakened. This makes it possible for individuals to be able to retrieve C-reps of the event when they need to deliberately think or communicate about the trauma, although these are likely to be fragmented and disorganised.

Reminders of the trauma are likely to lead to the automatic retrieval of S-reps, with vivid, decontextualized images being experienced as the event happening again in the present (Brewin, 2013).

### **1.2.3.3 Ehlers and Clark's cognitive model**

A cognitive model that offers more detail about the maintenance and treatment of PTSD than the above models has been postulated by Ehlers and Clark (2000). They propose that thought processes during the trauma as well as prior beliefs and experiences may increase the likelihood of negative appraisals. They identify a wide range of relevant negative appraisals, variously involving danger, violation of standards by self or others, or loss. These different types of appraisal are thought to explain the variety of emotions reported by patients with PTSD. Thus, this theory expands our understanding of relevant negative appraisals. In addition to identifying a wide range of negative appraisals, this model identifies a new feature, namely, mental defeat, encompassing both emotions and beliefs, which goes beyond mere helplessness in attacking the person's very identity, and has significant implications for cognitive coping strategies. The two aspects of the

model that have been strongly and consistently supported by empirical research are the wide range of appraisals and the variety of cognitive coping factors that influence the course of the disorder (Brewin & Holmes, 2003).

All three theories – Foa and Rothbaum's (1998) Emotional Processing Theory, Brewin, et al.'s (1996) version of Dual Representation Theory, and Ehlers and Clark's (2000) cognitive model – agree that one of the benefits of re-living traumatic events is the elaboration and contextualisation of the trauma memory (Brewin & Holmes, 2003). However, they differ in their account of how psychological treatment works, with Emotional Processing Theory focusing on the incorporation of disconfirmatory information into the trauma memory; Dual Representation Theory contributing the insight that treatment creates new trauma memories that compete with the original representations to be retrieved by trauma cues; and finally the Ehlers and Clark model addressing modifications to the trauma memory and negative appraisals (Brewin & Holmes, 2003).

Overall, it can be seen that there are links between the above theories in terms of emphasising the processing of traumatic events. They also describe memory disruption, in which some contextual information is missing, and the difficulty of distinguishing the traumatic event from the current context. Finally, the models explain how traumatic incidents related to PTSD can be recalled by activation of the memory of the traumatic event.

These models have implications for the treatment of trauma-related symptoms. In addition, various studies in clinical psychology contend that the

experience of trauma makes it difficult for people to create a coherent story. This is because individuals tend to hold assumptions about themselves and the world which are difficult to challenge or dismiss (Krystal, 1993).

### **1.2.4 Narrative approach and trauma**

Numerous authors have written extensively on the concept of narrative, particularly within the field of narrative psychology (Burnell, Hunt, & Coleman, 2009). Narratives are part of our daily lives in terms of communicating with others and making sense of the world around us. The narrative can be a helpful means of re-organising the chaotic nature of experiences (Goncalves et al., 2000).

A story or narrative account of an incident has three components: a beginning, middle, and an end. During the process of narrative or story-telling, people tend to explain the events they have experienced and the decisions they have made. This explanation can reflect the identity 'shape' of the individual (Tuval-Mashiach et al., 2004). The narrative not only expresses the identity of the individual but also influences the transformation of their identity. This is because, through the narration of the stories, individuals seek to know or reveal themselves to others (Lieblich, Tuval-Mashiach, & Zilber, 1998). Heider and Simmel (1944) found that participants constructed stories and attributed casual connections differently, depending on the person's position, and their stories had a basic beginning, middle, and end.

One of the findings about narrative in clinical and health psychology is that it enables participants to develop coherent stories about difficult or threatening

experiences (Joseph & Linley, 2005). The narrative can lead to an understanding of the event within the context of the complete life story and makes it more likely that the person will 'grow' from the event (Pennebaker & Seagal, 1999). Accordingly, this explanation can be useful in the medical and psychological fields because it might help those affected by trauma to make sense of such experiences.

In addition, Norman (2000) points out that narrative can be a significant aspect of trauma recovery. Narrative is a basic human way of making sense of the world (Riessman, 2008). Some people might be able to find meaning in their traumatic experiences, while others cannot. In interviews with PTSD patients, clinicians and researchers have observed that trauma memories are initially fragmented and disorganised. According to Burnell et al. (2009), fragmented and disorganised trauma memories can play a fundamental role in developing or maintaining PTSD symptoms. However, written trauma narratives as treatment progresses, found that a more coherent, organised, and detailed trauma narrative emerges (Gray & Lombardo, 2001). Basically, traumatic experiences affect the plot line of the life story, which means that the narrative becomes disorganised, fragmented and incoherent. The focus of the present study is therefore on the role of narratives in treating associated trauma symptoms.

Firefighters are routinely exposed to traumatic events in the course of their duties, including injury and death; they may work under a high level of stress and endure repeated exposure traumatic events. Consequently, they are at an

increased risk for long-term problems from traumatic stress, including sequelae such as PTSD, depression and anxiety (Higgitt, 2006).

Whilst traumatic experiences tend to create a fragmented narrative, the ability to re-organise and rebuild through narrative can aid resolution. This is one of the significant principles derived from a number of clinical therapies (Crossley, 2000). For example, Westwood, Black, and McLean (2002) reported successful results in helping veterans to apply story principles to their experiences. Narrative therapy concentrates on the life story of the client as the main instrument for therapeutic change. When locating the missing parts in the story which hinder coherence and continuity, the client is assisted to create an alternative story, thereby supporting a richer construction of their life and identity (Omer & Alon, 1997; Schafer, 1980). Narrative Exposure Therapy is a significant example of supporting individuals in the development of a coherent narrative during consecutive therapy sessions (Schauer et al., 2011).

### **1.2.5 Summary**

An overview and the diagnostic criteria of PTSD have been presented in the previous section including the medicalisation of this problem. Because the research has been conducted before DSM 5 was released, the DSM-VI-TR criterion has been applied. Several meta-analysis, regression, and systematic review studies were discussed above and there are a wide range of factors considered as a risk and protective factors of PTSD such as traumatic events, coping strategies, and social support, education as well as years of service,

shift work. Other psychological comorbidity such as anxiety, depression, substance use, alcohol use, and poor job satisfaction which were the most common disorders could be comorbid with PTSD.

This section also presented PTSD models in order to understand the psychological processes that underlie PTSD. Early theories of PTSD such as social-cognitive, conditioning, information-processing, and anxious apprehension have been highlighted to make the distinction between these theories and the recent theories of PTSD associated with narrative including Foa and Rothbaum's (1998) Emotional Processing Theory, Brewin, et al.'s (1996) version of Dual Representation Theory, and Ehlers and Clark's (2000) cognitive model.

The narrative approach and trauma related has been presented and discussed to highlight the narrative in clinical and health psychology process.

Fragmented and disorganised has been found in the traumatised memory and narrative enables memory to develop coherent stories about difficult or threatening experiences.

In the next section, the first responders and emergency workers including firefighters will be discussed in terms of the prevalence rate of PTSD, risk and protective studies associated with specific first responders' job, Saudi firefighters, culture, and mental health.

### ***1.3 First responders and emergency service personnel***

Victims of traumatic events have a high potential to suffer from physical and psychological problems such as PTSD, depression and anxiety symptoms.

However, individuals who come to the assistance of victims of traumatic events may also suffer from psychological disorders. A certified first responder is a person who is trained to provide pre-hospital care for medical emergencies. They have more skills than someone who is trained in basic First Aid but they are not a substitute for qualified medical emergency personnel, such as physicians, nurses and paramedics. The job of a first responder is to protect the public when a dangerous situation arises. First responders deal with such situations on a daily basis and are expected to be courageous and even self-sacrificing. They may include firefighters, police officers and emergency medical personnel, as well as security officers and bus drivers. Thus, psychological consequences are one of the most significant consequences of a firefighters' job (Fullerton, McCarroll, Ursano, & Wright, 1992).

A systematic review and meta-regression study was conducted on 28 studies reporting on PTSD prevalence in rescue teams until September 2008. The result showed that the worldwide pooled current prevalence was 10%. The Meta-regression modelling in studies reported that Asia had a higher estimated prevalence, on average, than those from Europe, however not higher than the North American estimates. The study also highlighted that

ambulance personnel studies showed higher estimated PTSD prevalence than studies with firefighters and police officers (Berger et al., 2012).

First Responders are routinely exposed to traumatic events in the course of their duties, including injury and death (Angleman, 2010). In addition, they may work under a high level of stress and endure repeated exposure to traumatic events. Accordingly, they are at an increased risk for long-term psychological problems from traumatic stress, including sequelae such as PTSD, depression, anxiety and other psychological disorders (Higgitt, 2006).

### **1.3.1 Prevalence of PTSD in firefighters**

The prevalence rate for PTSD in firefighters varies widely, from 6.5% (Haslam & Mallon, 2003) to 37% (Bryant. & Harvey., 1995). The prevalence of PTSD in firefighters differs between countries Table1.1. This is because the possibility of developing PTSD is influenced by factors such as the type, severity and duration of traumatic events, as well as the surrounding culture. For example, Terheggen, Stroebe and Kleber (2001) report that the most traumatic event for Tibetans was the witnessing the destruction of their religious signs. However, such events do not typically find their way onto traumatic-event check-lists. The following section reviews differences in prevalence rates across studies in several countries.

Comparing US (n=203) and Canadian (n=625) firefighters, a study by Corneil, Beaton, Murphy, Johnson and Pike (1999) evaluated the prevalence of PTSD from duty-related trauma exposures. The rates of PTSD were almost 22% (US)

and 17% (Canadian) respectively. In Japan, Mitani, Fujita, Nakata and Shirakawa (2006) evaluated the impact of PTSD on 243 fire service workers between one fire department in an urban area (n=112) and another in a rural area (n=131). They found that overall prevalence of PTSD was 17.7%. In the US, Corrigan et al. (2009) sought to determine the frequency of psychological symptoms and PTSD risk among New York City firefighters, 2.5 years after the World Trade Centre attack, using a computerised, self-administered questionnaire. Of the 8,487 firefighters who were assessed, 1,016 (12%) met the criteria for PTSD risk, whereas 76% reported at least one symptom. In Australia, Bryant, Sutherland and Guthrie (2007) investigated the prevalence of PTSD by assessing 60 trainee firefighters during training (before trauma exposure), with 46 of the 60 re-assessed four years later (after trauma exposure). They found that 15% of firefighters met the criteria for PTSD. Similarly, using the CAPS scale (Clinician-Administered PTSD Scale), Bryant and Guthrie (2007) analysed the rate of PTSD among 68 trainee firefighters during training (before trauma exposure), with 52 of the 68 re-assessed four years later (after trauma exposure). At follow-up, 12% met the criteria for PTSD. In a UK study by Haslam and Mallon (2003), the Post-traumatic Diagnostic Scale (PDS) was used to assess 31 fire service workers. Results showed that only two participants (6.5%) reached the *DSM-IV* criteria for PTSD. In Germany, a study was conducted by Wagner, Heinrichs, & Ehlert, (1999) to investigate the prevalence of PTSD for 402 firefighters using German version of the PTSD symptom scale. The result showed the rate of PTSD symptoms was 18.2%. Finally, in a study by Al-Naser and Everly (1999) in Kuwait, the prevalence of

PTSD among 108 firefighters was assessed. They found the rate of PTSD to be approximately 18.5%. These figures suggest that firefighters who experience multiple traumatic events as a result of the work environment may develop related symptoms, and they should not be ignored.

**Table 1:1 Prevalence of PTSD in firefighters between countries**

Study & country	Mean age (SD)	Sample size & type	Design	PTSD scale	PTSD rate
Bryant. & Harvey., (1995) <i>Australia</i>	43.00 (12.66)	751 mixed Firefighters and station officers	Cross-sectional	IES	37%
Corneil, Beaton, Murphy, Johnson and Pike (1999) <i>The U S</i>	38.85 (NA)	203 mixed Firefighters and station officers	Cross-sectional	IES	22%
Corneil, Beaton, Murphy, Johnson and Pike (1999) <i>Canada</i>	38.90 (NA)	625 mixed Firefighters and station officers	Cross-sectional	IES	17%
Wagner, Heinrichs, & Ehlert, (1999) <i>Germany</i>	39.68 (9.68)	402 mixed Firefighters and station officers	Cross-sectional	PTSD symptoms scale	18.2%
Al-Naser and Everly (1999) <i>Kuwait</i>	29.1 (NA)	108 Firefighters	Cross-sectional	IES	18.5%
Haslam and Mallon (2003) <i>The UK</i>	41 (NA)	(31) mixed 11 Firefighters 20 station officers	Cross-sectional	PDS	6.5%
Mitani, Fujita, Nakata and Shirakawa (2006) <i>Japan</i>	42.5 (9.9)	243 Firefighters	Cross-sectional	IES-R	17.7%
Bryant, Sutherland and Guthrie (2007) <i>Australia</i>	29.6 (5.0)	46 Firefighters	Longitudinal	PDS	15%
Bryant and Guthrie (2007) <i>Australia</i>	33.0 (4.40)	52 Firefighters	Longitudinal	CAPS	12%

*IES: impact of Event Scale; IES-R: impact of Event Scale Revised; PDS: Posttraumatic Diagnostic Scale; CAPS; Clinician-Administered PTSD Scale*

### 1.3.2 Firefighters in Saudi Arabia

The first band of firefighters was founded in 1947 under the municipality sector. In 1948, the firefighter band moved from the municipality sector to the police sector and named it the General Presidency for fire. Thereafter, the name was changed to General Directorate of Civil Defence and, in 1950, it was linked to the interior ministry (Interior Ministry, 2013). Since 1955, the General Directorate of Civil Defence has developed gradually, acquiring the latest technical equipment and training firefighters in Makkah province. Makkah province has three main cities: Makkah, Jeddah and Taif. Each city has a General Directorate of Civil Defence and several fire stations depending on the city or population size. Under each fire station there are five mini stations and each mini station has three groups of firefighters with each group consisting of 10 firefighters; the duration of each team's shift is 12 hours and firefighters are then off for 24 hours before the next shift<sup>1</sup>. The General Directorate of Civil Defence in Makkah province has more attention from the government than do the other Saudi provinces as there is a specific department in Makkah province regarding to the Hajj and Omra time. Because Makkah city has the Sacred House and the Kaaba, more than ten million people from around the world visit Makkah city per year, and more than four million do the Hajj in Makkah in Zulhajja, the Arabic month (Hajj Ministry, 2013). Accordingly, firefighters in Makkah province sometimes work '24 hours

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<sup>1</sup> This information was obtained via personal communication with General Directorate of Civil Defence Information Centre on Makkah province in August 2012.

on and 24 hours off', which will undoubtedly affect them physically and psychologically.

To become a firefighter in KSA's fire and rescue service, firefighters are required to obtain a certificate reach a certain standard of general health. They then attend 6 months' training before starting their job. However, the majority of those who apply for this job do not aspire to be firefighters and are not aware of the details of the job; rather their aim was simply to find a job and earn an income. Their lack of preparedness for this tough job makes them more likely to succumb to psychological problems as discussed with firefighters in the pilot study about the training program before they started and found in the civil defence Institute training programmes (Defence, 2012).

In comparison, it is relatively harder to become a firefighter in UK. Many serving firefighters spend months or years applying and preparing prior to gaining entry. The process for UK firefighter begins with a Personal Qualities and Attributes (PQA) assessment regarding confidence, resilience, problem-solving, and situational awareness. This assessment is carried out at an assessment development centre. An interview is also used to assess the individual's experience in relation to the PQA (Fireservice, 2014). This is followed by training, including 2 or 3 hours of 'drill night' weekly on the station plus periodic refresher courses in areas such as breathing apparatus and trauma care. The firefighter shift system in the UK entails a 'four days on and four days off' routine creating an eight-day cycle. In the first two days

they work 9 hours and in the following two days, 15 hours, before getting leave for four days (HumberSide Fire&Rescue Service, 2014).

In contrast, firefighters in the KSA do not have a 'personal qualities and attributes' assessment before they start the training, and the shift system is more demanding, sometimes requiring them to work nights or days with very little time off. During the time of Hajj, they work '24 hours on and 24 hours off'. research has shown that working an irregular shift pattern may be causing long-term damage to people's memory and mental abilities (Saijo, Ueno, & Hashimoto, 2008). The shorter periods of leave suggests that Saudi firefighters might suffer from more occupational-related psychological problems than, for example, UK firefighters. In addition, Saudi firefighters, may be suffering from psychological problems before they even become firefighters because they is not psychologically assessed when selecting them for the job. It is clear that the physical and psychological criteria of the KSA Fire and Rescue Service need to be more rigorous. Both the psychological history and the personal qualities and attributes of firefighters need to be systematically examined. Although the General Directorate of Civil Defence has a research centre, psychological issues have so far not been given attention. The researchers focus mainly on the facilities, safety, and management improvement. Therefore, psychological well-being needs to be taken into consideration in future research on this sector in Saudi Arabia.

An important incident associated with the firefighter's work in Makkah province was the 2009 Jeddah flood. The floods affected Jeddah city and

other areas in Makkah province. Civil defence officials described this flood as the worst in 27 years. According to the civil defence's official report, around 122 people were killed and 350 people were missing. Roads in the flood area in Jeddah city were under three feet of water on 26 November 2009, and the majority of victims were believed to have drowned in their cars. More than 3,000 vehicles were damaged or swept away. Many houses were damaged and business losses are estimated to amount to one billion Saudi Riyals (SR) (approximately £170 million). As this flood occurred in the Hajj pilgrimage time in Makkah city, the firefighters of Makkah province had an intensive work schedule, with physical and psychological problems among firefighters could be increasing during this time, due to the lack of psychological care in Saudi Arabia.

### **1.3.2.1 Saudi culture**

The Kingdom of Saudi Arabia (KSA) is a conservative Muslim country in the Middle East. At present, its mental healthcare services are poorly developed. With a population of 29.196 million people (20.3 million Saudi), it occupies an area of over 2.250.00 km<sup>2</sup> (Economy and Planning Ministry, 2013). The KSA economy attracts people from all over the world for working or living, due to the presence of the two 'houses of Islam', namely, Makkah and Madina as well as the growing prosperity of the economy. Three main cultural spheres have influenced the country, namely Islamic values, Islamic heritage and Bedouin traditions (Koenig et al., 2014). This means that mental healthcare

should be delivered in such a way that is acceptable of long-held, sacred traditions and belief systems.

During the last 5,000 years, Arab people have traditionally been part of a trade network that extends north to nations around the Mediterranean Sea, Arabic Gulf, and South Asia, and south to the African continent. Numerous Arabs are still actively engaged in the traditional Bedouin lifestyle, including coastal fishing, craftsmanship and art, and long-distance trading. Regional and clan identities as well as kin-based tribal affiliations continue to be very important.

Since the 7<sup>th</sup> century, the Islamic religion has influenced many aspects of Araba life such as work, community, and family life. Derived from the religion of Islam, KSA rule of law is called Sharia. People stop to pray and worship five times a day, at dawn, noon, mid-afternoon, sunset, and shortly after sunset. The month of Ramadan is the holiest time of year, and in this month, no eating, drinking, or sexual activity may take place from dawn (Sahoor) to dusk (Iftar). In the Zulhajja Arabic month, the hajj to Makkah takes place every year. Millions of people travel from all over the world to participate in this religious ritual. For men, it is required that they listen to the teaching of the Imam, called (khutba), and pray at the mosque on Friday at noon. Saudi people believe that prayer and reading of the Holy Qur'an, as well as following the religious strictures of fasting at Ramadan and participating in the religious rituals, are central to treating mental and physical health problems, as well as maintaining mental and physical health (Koenig et al., 2014).

In addition, family is sacred in KSA and caring for family members is considered an important part of the religious obligation. Children in Saudi's families do not leave home until they are married and the family unit cares for its elderly members at home rather than sending them to a nursing home. The extended family is thus an important element in the Saudi cultural structure. Mental healthcare also takes place within this extended family, and such problems are usually kept secret (Qureshi, Al-Habeeb, & Koenig, 2013). This suggests that in Arabic societies, as in most societies, individuals with mental health issues and their families tend to be stigmatised and isolated.

Islamic law dictates social customs. For instance, women are required to cover their bodies and sometimes face using black robes and a face-covering known as (Abaya). Women may not drive, and may not converse with men in public except with their husbands, brothers or fathers. In the formal education system, females are physically separated from the males whether in classrooms, workshops, conferences or offices. Women may meet with a male such as psychologist or psychiatrist if a family escort, termed Mehrum (i.e., father, husband, and sibling), and accompanies her. In Saudi culture, mental illness is still related to magic, evil spirits, effects of the evil eye, and punishment from God, or with violence, addiction and suicide (Pridmore & Pasha, 2004). Thus, treatment of mental health problems needs to take all these religious and cultural factors into account (Ratner & El-Badwi, 2011).

### 1.3.2.2 Mental health in Saudi Arabia

Three key aspects of the mental health system in the KSA can be highlighted in terms of the past, present, and future. Up until the early 1950s, there were no mental health hospitals in KSA. The first mental hospital was built in 1952 in Taif city, an hour's drive southeast from Makkah city. Then, in the early 1980's, the medical school at King Abdulaziz University in Jeddah city began studying the biomedical aspects of the hajj, an annual Islamic pilgrimage to Makkah, and a mandatory religious duty for Muslims which must be carried out at least once in their lifetime. During the hajj, more than three million visitors come to Makkah during the twelfth month of the Islamic calendar, termed Zulhajja. No research has been inducted on how this pilgrimage affected the mental health of visitors or the residents of KSA (Qureshi et al., 2013). Almost no research existed on psychiatry and legal or ethical issues in KSA during this time (Koenig et al., 2014).

In 1983, US-trained psychiatrists recommended enhancing aspects of the mental health system such as the quality psychiatric treatment, developing an appropriate mental health hospital environment, including psychotherapy, outpatient care, and a mental health system adapted to Saudi culture (Pasnau R & Hartmann, 1983). These contributions have gradually improved the mental healthcare system in KSA over the past 60 years (Koenig, Al Zaben, Sehlo, Khalifa, & Al Ahwal, 2013).

Since the early 1980's until now, the treatment of Saudi people with chronic mental illness in rural areas involved religious faith healing. This included

treatments to exorcise demons or to confront jealousy or the evil eye. Physical thrashings or cauterization treatment methods were used to get evil spirits to leave the body (Naseem Akhtar Qureshi, Al-Amri, Abdelgadir, & El-Haraka, 1998). On the other hand, anti-psychotic drugs were commonly used at that time in mental health hospitals and in psychiatric wards within general hospitals. Psychotherapy was seldom used with the chronically mentally ill, who were usually medicated and housed. Mental health problems accompanied by substance abuse were often hidden without receiving significant attention until the late 1990s, because those who ran the mental health facilities were not well trained in psychiatry and psychotherapy (Koenig et al., 2014).

In the present time, some important points associated with KSA mental health services will be highlighted in order to determine the present need of these services in the KSA. Information about the prevalence of psychiatric disorders in the Saudi population is an important point. A few studies on mental disorders have been conducted in this setting. Several have been conducted to assess the prevalence of depression and related factors in the Saudi population (Al-Gelban, 2007; Al-Shammari & Al-Subaie, 1999; Al Gelban, 2009; Asal & Abdel-Fattah, 2007). Other studies have been carried out to investigate emotional symptoms such as depression, anxiety, somatisation, and general mental health in medical and primary care settings (Al-Faris et al., 1997; Al-Khathami & Ogbeide, 2002; Becker, Al Zaid, & Al Faris, 2002). Other studies investigated the characteristics of patients admitted to hospitals specialising

in the treatment of addictions (Al-Sharqi, Sherra, Al-Habeeb, & Qureshi, 2012; Hafeiz, 1995). So far, no studies have been conducted on post-traumatic stress disorders in Saudi Arabia.

These studies highlighted some important patterns, such as the strong association between depression and anxiety and the following factors: living in a remote, rural area; poor living conditions; low income; loss of a close relative; unemployment; and especially substance abuse and alcohol consumption.

In terms of the KSA's mental health system, there has been an improvement over the past two decades. In 1989, numerous primary healthcare (PHC) centres were established throughout the KSA in order to treat medical problems in the general public. For this, the KSA followed recommendations of the World Health Organization (WHO) in 2000 in making the PHC centres the first contact for those with mental health problems. If the PHC centre cannot handle the problem, the patient is then referred to the psychiatrists in general hospitals. If the psychiatrists cannot manage the problem, the patient is then referred from the general hospital to the specialty psychiatric hospitals (Qureshi, Molen, Schmidt, Al-Habeeb, & Magzoub, 2009). There are over 125 private general hospitals with private psychiatric facilities in the KSA, and the clinics can contact them directly for consultant and/or treatment (Ministry of Health, 2010). As a consequence of the stigma of mental health problems, people who have the financial resources prefer to consult the private clinics. These clinics offer psychotherapy, psychotropic drugs, speech therapy,

addiction services, and rehabilitation services to children, adolescents, adults, and elderly people(Koenig, 2014).

Since then, the number of psychiatric hospitals in KSA has expanded to 21 specialist hospitals including three facilities called 'Al-Amal' hospitals which specialise in the treatment of addictions. By 2012, many psychiatric hospitals and child adolescent psychiatric clinics had been established. Nevertheless, the number of psychiatric beds in mental hospitals has remained relatively constant over the past 5-10 years at close to 3,000 (12 per 100,000) (Qureshi et al., 2013).

According to the Saudi Arabian Mental and Social Health Atlas (SAMHA), in 2010, there were 515 psychologists, occupational therapists, and social workers at outpatient facilities; 1,176 nurses in mental hospitals, and 1,980 nurses working in out-patient facilities in the KSA. However, most of these nurses have not had specialist training in psychiatry, psychology or social work (Al-Habeeb & Qureshi, 2010).

Those Saudi psychiatrists who prefer to obtain fellowship training in forensic, addiction, geriatric, or consultation-liaison psychiatry travel to Western countries such as the UK, US, and Canada. However, many Saudi psychiatrists find it difficult to apply their fellowship training in Western countries to the unique Saudi cultural context and the experiences of those with mental health illness living in Saudi Arabia (Koenig et al., 2014).

Overall, there has been a gradual growth in the recognition and treatment of mental health problems in Saudi Arabia over the past 60 years. Extending mental health services and developing training programmes and academic institutions for training in psychiatry and psychology sub-specialties are necessary for improving mental healthcare for the KSA population. There is a tremendous opportunity for systematic research on the identification and treatment of mental health disorders in the KSA. It is critical that this research takes into account the role of culture, family, and religion in the diagnosis and treatment of mental disorders in this country.

### **1.3.3 Summary**

Overall, it is important to note that PTSD prevalence rates might be an artefact of the selection of PTSD measures, sample size, and differences in the types of research participant, namely, fire service workers only or a mix of other emergency responders. In addition, risk factors such as years of service, education level, and shift work are critical variables in psychological research on firefighters. On the one hand, years of service may increase the likelihood of being exposed to multiple traumatic events and developing PTSD symptoms. On the other hand, the experience of firefighters may increase the likelihood of becoming inured to traumatic events and hence developing coping skills. Education can also play a significant role in increasing firefighters' ability to cope, with a high education level potentially increasing the individual's sensitivity and affecting them negatively. Shift times can also

affect firefighters negatively by exacerbating the stress they experience and developing psychological problems.

The situation of firefighters in Saudi Arabia has been reported above in terms of the lack of psychological support adding to the stressful environment job. The Saudi culture also highlighted the family and religion factors which may play a negative or positive role of maintenance or development PTSD symptoms among Saudi firefighters. Even though some firefighters may recover on their own, others will need to access mental healthcare programmes to assist their recovery. Treatment of PTSD will be discussed and presented in the next section.

#### **1.4 Treatment of PTSD**

Developing countries suffer from poor or no psychological trauma care, and the first responders such as firefighters may be exposed to secondary trauma or compassion fatigue (Figley, 1995). Early treatment provided by peers is an appropriate intervention result for traumatised people in their work environment who fail to recover over time or after crisis intervention.

According to Creamer et al. (2012), one rationales for peer-support provision programmes is that they meet a legal and moral duty to care for employees.

They may also overcome some of the obstacles of standard care such as stigma, poor access to providers, a lack of time or trust, and fear of work repercussions.

Early intervention makes it possible to prevent later psychological problems or long-term psychological morbidity (Scully, 2011). There is considerable argument about which type of intervention should be offered to first responders, at what time, and to whom after exposure to traumatic events (Roberts, Kitchiner, Kenardy, & Bisson, 2010). Some experts contend that interventions should target people who are at the highest risk for experiencing psychological problems as a consequence of potentially traumatic events (Bisson, Roberts, & Macho, 2003; Brewin et al., 2008). Other authors use different terms when discussing stress-related syndromes and treatment. For instance, Everly and Mitchell (2008) use the term 'crisis intervention' for the "urgent psychological or behavioral care designed to first stabilize and then reduce symptoms of distress or dysfunction so as to achieve a state of adaptive functioning, or to facilitate access to a continuum of care when necessary" (p. 8). The aims of crisis interventions are (a) meeting basic psychological and physical needs in order to stabilise psychological functioning; (b) reducing the psychological dysfunction of distress; (c) restoring adaptive psychological functioning, and (d) assisting the person to access the next level of care.

Another intervention term is 'early psychological interventions', used by Roberts et al. (2010). This entails beginning an intervention within three months after the traumatic incident in order to prevent PTSD or ongoing distress in those at risk for PTSD symptoms or other psychological disorders. Early mental health treatment is an intervention term that has also been used

by Kehle et al. (2010). This treatment is psychotherapy- and psychopharmacotherapy-based. Moreover, the US Department of Veterans Affairs and Department of Defence (VA/DoD, 2010) terms all treatment interventions for post-traumatic stress, acute PTSD, chronic PTSD, acute stress reaction (ASR), and acute stress disorder (ASD), 'management of post-traumatic stress' (see VA/DoD (2010).Treatment guidelines for the current recommended interventions and their limitations). It can be seen that the word 'intervention' could refer to a wide range of activities, from addressing physical needs to psychopharmacotherapy (VA/DoD, 2010).

Numerous studies have conducted a screen and utilised a different treatment methods after different traumatic events in order to identify those individuals who have developed PTSD symptoms and provide them with early treatment (Brewin et al., 2008). According to VA/DoD's (2010) *Clinical Practice Guidelines for Management of Post-Traumatic Stress*, early identification of PTSD symptoms and rapid referral for treatment can be helpful in terms of reducing suffering and decreasing the severity of functional impairment. Therefore, crisis or early intervention is recommended for traumatised people who work in risk environments, such as firefighters and emergency workers.

#### **1.4.1 Effective interventions for PTSD and their limitations**

The conceptualisation of PTSD in the various psychological models makes it possible to develop effective psychological treatments (Robjant & Fazel, 2010). According to the National Institute of Health and Clinical Excellence (NICE) (2005), both trauma-focused cognitive behaviour therapy (TFCBT), and

Eye Movement Desensitisation and Reprocessing (EMDR) have potential for treating PTSD effectively.

Bisson et al. (2007) examined the effectiveness of TF CBT, EMDR, stress management and group CBT (Cognitive Behavioural Therapy) as a part of the NICE (National Institute of Health and Clinical Excellence) guideline for treating PTSD. Thirty-eight randomised controlled trials were included in the meta-analysis. They found that the most effective psychological treatments in reducing PTSD are TF CBT and EMDR. However, stress management and group CBT were also found to be effective in reducing PTSD. One of the significant elements of TF CBT and EMDR is exposure to memories of the traumatic event.

Another review study of systematic reviews and meta-analysis studies of treatments for PTSD have concluded that TF CBT and EMDR are efficacious. The result showed that seven out of eight meta-analysis or systematic reviews, trauma-focused psychological treatments are most effective in treating PTSD (A. Ehlers et al., 2010).

A systematic review study of 17 treating PTSD in first responders' studies was conducted by Haugen, Evces, & Weiss (2012). Thirteen were case or observational studies and were considered separately. Six of these studies were published between 1986 and 1999 and the treatments described included a problem-solving program incorporating elements of rational-emotive and cognitive therapy; broadly psychodynamic therapy with an emphasis on emotional catharsis; in vivo and imaginal exposure; EMDR; and

prolonged exposure. The result of all cases showed improvement after few sessions (range=4–10); not all studies reported the number of sessions. The other seven articles were published between 2004 and 2009 and the treatments delivered are EMDR, CBT, and Behavioural Activation. Treatment intensity ranges from a low of 4 sessions to a high of 15 sessions. Variations in intensity occurred, with some sessions (EMDR) lasting up to 3 hours. Treatment was not delivered necessarily weekly with a 15-session treatment extended over the course of almost 7 months. The result of all cases reported successful outcomes.

With regard to the other four studies in Haugen and their colleagues' systematic review above, they were RCTs studies with WL and the treatments delivered were Brief Eclectic Psychotherapy (BEP) 16 weekly, 60-minute sessions, CBT study comprised twelve 75-minute sessions, EMDR or a standard stress management program (SMP), each consisting of 6 hours of individualized contact, and virtual reality (VR) exposure sessions ranged from 10 to 17 weekly 75 minute sessions. The result showed a significant effect of CBT and VR treatment for PTSD between pre- and post-treatment time. However, a treatment effect was not found for a number of secondary outcomes at either post-test or follow-up in EMDR study. The result highlighted that CBT and BEP are the strongest preliminary evidence for efficacy with the fires responders. The study also recommended that additional treatment studies of PTSD in first responders are sorely needed and

treatment such as EMDR and VR treatments identified in case studies and controlled trials should be tested in RCTs.

Another technique named psychological debriefing (PD) was introduced almost 30 years ago to minimise the negative effects of potentially traumatic event (PTE) on emergency service workers (Mitchell, 1983). PD was primarily defined as a group intervention for emergency workers of a comprehensive approach to the management of traumatic stress PTE. However, PD has also been used as a single-session with individuals and as a stand-alone intervention (Rose, Bisson, Churchill, & Wessely, 2002).

A psychological debriefing review and meta-analysis study of 15 RCTs studies was conducted in order to concerns the efficacy of single session psychological “debriefing” in reducing distress and preventing the development of PTSD. The result showed that no evidence that single session individual psychological debriefing is a useful treatment for the prevention of PTSD after traumatic events (Rose et al., 2002).

There is good evidence for the efficacy of TFCBT and EMDR for the treatment of PTSD highlighted in the review studies above, and these are both recommended in the NICE guidance for treating PTSD (NICE, 2005). However, current NICE guidelines in the UK do not recommend debriefing technique for PTSD (NICE, 2005).

### 1.4.2 Randomised control trials (RCTs) for treating PTSD in first responders

The review of the literature on treating PTSD symptoms in first responders showed that few studies used randomised control trials (RCTs) (Haugen et al., 2012). Two studies that did use RCTs took place in developed countries. The first one by Gersons, Carlier, Lamberts, and van der Kolk (2000) studied two different types of therapies in 42 Amsterdam police officers diagnosed with PTSD. Participants were randomly assigned to the treatment group (n=22) and wait-list<sup>2</sup> control group (WLC) (n=20). While the treatment group received 60 minutes of Brief Eclectic Psychotherapy (BEP) sessions spread over 16 weeks, the WLC group received the same BEP sessions after 7 months. They were assessed one week before treatment (T1), after treatment session 4 (T2), after session 16 as a post-test (T3), and at a 3-month follow-up (T4). The results showed no significant differences between groups at pre-test T1 whereas significant differences between groups in reduced PTSD symptoms were found at post-test T3, and at follow-up T4. In contrast, the seven months waiting period for the WLC participants is a relatively long time; the wait-list patients would have worsened while the treated patients would have improved markedly (Gersons et al., 2000). The second RCT study used CBT for 31 New York City disaster workers Difede et al., (2007). The participants were randomly assigned to the CBT group (n=15) and the 'treatment as usual' (TAU) condition (n=16). The TAU has been chosen as an externally valid contrast condition of mental health treatment that is normally made accessible in the

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<sup>2</sup> The control group receives the intervention later, after a waiting period, usually when the study is completed.

aftermath of a traumatic incident. None of the TAU group sought treatment for PTSD during their TAU participation despite the recommendation that they do so. Participants in CBT group received twelve 75-minute sessions over 12-week. The TAU group referred back to their referring source (e.g. employee assistance, occupational health) to obtain treatment which meant they did not receive treatment for their PTSD symptoms. The participants were assessed at three points of time: baseline (T1), post-test (T2), and 3-month follow-up T3. Only 8 CBT and 14 TAU participants completed treatments. The results showed a significantly greater reduction in PTSD symptoms in the CBT group only. However, the attrition rate, and small sample size, may have affected these results. This concludes a discussion of RCTs on this topic in developed countries.

In developing countries, a study of first responders using RCTs was conducted in Mexico by Jarero, Amaya, Givaudan, and Miranda (2013). Thirty-nine first responders were recruited from Red Cross paramedics (n=15), emergency line operators (n=15), and firefighters (n=9). The participants were randomly assigned to the eye movement desensitization and reprocessing (EMDR) individual protocol for paraprofessional use in acute trauma situations (EMDR-PROPARG) group (n=20), and a supportive counselling group (n=19). Each group received two 90-minute individual sessions. The participants were assessed using the Short PTSD Rating Interview (SPRINT) at baseline (T1), post-treatment (T2), at a 1-month follow-up (T3), and at a 3-month follow-up (T4). The results showed a significant reduction in PTSD after treatment at T2

and further reductions at T4. In contrast, non-significant reductions were experienced in the 'supportive counselling' participants after treatment at T2, whereas an increase in PTSD scores was found at follow-up at T4.

The efficacy of group psychological debriefing was examined by Tuckey and Scott (2013). First randomized controlled trial of critical incident stress debriefing (CISD) was conducted with 97 firefighters. The participant divided into three groups n=36 (CISD), n= 48 (Education), and n= 38 (Screening). The intervention was delivered for the CISD (approximately 90 minutes) and Education (90-minute a PowerPoint presentation integrated with group discussion) conditions only. The result reported that no significant effects on PTSD or psychological distress. The study suggested that future studies should focus on individual, group, and organizational factors.

Even though psychological treatments in numerous studies have shown effectiveness in reducing PTSD in developed countries, there is a lack of information concerning effective treatments in developing settings (Robjant & Fazel, 2010). Researchers have highlighted a need for enhanced knowledge about current treatments, such as CBT, EMDR and CISD. Moreover, there is a need for alternative treatments to be devised which can reduce dropout and treatment failures (Cukor et al., 2009).

Testimony therapy is a type of therapy which was developed to place the trauma within the cultural social-political context in which it occurred (Cienfuegos & Monelli, 1983). A few studies have used testimony therapy such as a pilot study of 20 adult refugees from Bosnia living in the US (Weine,

Kulenovic, Pavkovic, & Gibbons,(1998). Each participant had 6 sessions, each session lasting 90 minutes. The post-treatment was assessed at 2 months and 6 months. The results showed sustained reductions in PTSD symptoms and significant reductions in depression.

Because of the lack of psychological trauma care in Saudi Arabia, and a stigma surrounding psychological problems in Saudi culture, as well as the nature of firefighters work, Narrative Exposure Therapy (NET) might be an appropriate type of therapy for traumatised Saudi firefighters. Furthermore, NET has been tested and developed in field studies<sup>3</sup> (Schauer et al., 2011).

### **1.4.3 Narrative Exposure Therapy (NET)**

Narrative Exposure Therapy (NET) is a short-term treatment which was developed specifically to treat PTSD symptoms resulting from violence and/or multiple or continuous trauma (Schauer et al., 2011). NET was derived and developed from a combination of Cognitive Behavioural Therapy (CBT) (Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004) and testimony therapy (Cienfuegos & Monelli, 1983). In contrast to other exposure treatments for PTSD, the client receiving NET does not identify a single traumatic event as a target in therapy. Rather, NET covers the client's entire life in the narrative construction (Bichescu et al., 2007).

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<sup>3</sup> Field research refers to collecting or creating new information outside of a laboratory or typical workplace. Fieldwork, which is conducted in situ, can be contrasted with laboratory or experimental research which is conducted in a quasi-controlled environment.

NET has been developed in accordance with the theoretical understanding of the PTSD framework, autobiographical memory and neural fear networks<sup>4</sup> (Conway & Pleydell-Pearce, 2000). This understanding makes it possible to recognise intrusive symptoms and understand how these can be triggered in the brain (Foa & Rothbaum, 1998). The cognitive processing model (Ehlers & Clark, 2000) emphasises that PTSD symptoms make it possible for the autobiographic memory to distort the traumatic events and detach from the contents of implicit memory. Consequently, the traumatised memory produces a fragmented narrative of the traumatic memories. Emotional processing theory (Foa & Rothbaum, 1998) asserts that reducing the PTSD symptoms can occur as a result of the habituation of emotional responses through exposure.

NET makes the distinction between declarative 'cold' memory and non-declarative 'hot' memory. This description supports the Dual Representation Theory of PTSD in terms of contextualised representations (C-reps) or 'contextual memory' in Brewin et al. (1996)'s revised theory (similar to cold memory) and sensory-bound representations (S-reps) in Brewin et al. (1996)'s revised theory (similar to hot memory) (Brewin et al., 2010)

Cold memory includes contextualised information related to one's life at different stages of organisation. However, specific information increases at each stage of the life-course (Conway & Pleydell-Pearce, 2000). The

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4 The fear networks of individuals with PTSD are thought to differ from those of individuals with other anxiety disorders (Edna B. Foa & Kozak, 1986).

information in the first stage of organisation relates to life-course periods, referring to phases in life or the individual's occupation during a specific period. The second stage of organisation refers to information about general single or repeated events in the individual's life, and describes what the individual's life is like during this period (Neuner, Catani, et al., 2008).

Complementing the contextual information that is stored, sensory and perceptual information (hot memory) is associated with this event-specific knowledge (Schauer et al., 2011).

Hot memory refers to detailed sensory information, cognitive and emotional perceptions as well as physiological and physical responses. The structure of this memory is linked with emotion and is closely involved in sensory perceptual representations of events. This structure in traumatic events is known as 'fear networks' (Lang, 1993). The relationship between single items in the fear networks is particularly strong in that when one external or internal stimulus in the fear network is activated, the whole network will be activated. Therefore, flashbacks in PTSD will occur as a consequence of whole-network activation (Robjant & Fazel, 2010).

#### **1.4.3.1 Therapeutic process**

According to the NET therapy process, when the PTSD diagnosis has been completed and informed consent has been obtained, the treatment can be commence immediately because NET is a strictly manualised treatment (Schauer et al., 2011), meaning that the treatment has precisely delineated steps, so that each person has the same treatment. NET sessions are typically

60-120 minutes in length. One or more sessions per week should be conducted, preferably in close succession, with a maximum of two weeks between sessions with approximately 10 sessions in total (Schauer et al., 2011).

In the first session, the client undergoes psycho-education in order to understand PTSD theoretically, as well as the NET process and the rationale behind the treatment. An important point in the psycho-education session is explaining the avoidance of reminders of the traumatic event as a key feature of PTSD, and the impact of this inhibition and the treatment of this.

The second session entails constructing the 'lifeline' of the client. The lifeline includes both significant happy and sad events in chronological order, and these events are briefly introduced by the client with support from the therapist to ensure the correct of the chronological events. The lifeline is helpful at the beginning of the therapeutic relationship and takes into consideration the approximate number of sessions required to address all traumatic events. Some events may only be disclosed later during the course of therapy.

Following this second session, the client provides a detailed autobiography about the traumatic events in chronological order. The time between events is described briefly to produce a coherent narrative through the contextualising of traumatic events within the individual's life. When the client approaches a traumatic event, the attention is on contextual information. Firstly, clients describe what their life was generally like at that

time (what their typical day is like, what they are doing and when, where they are living). Secondly, clients narrow down this information as specifically as possible to what occurred when the event happened. Gently resisting the client's attempt to hurry through or avoid the emotions associated with the memory, the therapist encourages the client to narrate the traumatic experience slowly in chronological order as they experienced it at the time of the event. The therapist also encourages the client to explain all sensory modalities along with their thoughts and feelings. The next step entails the therapist recording the autobiography and revising it with each subsequent reading. Transformation of the initial fragmented story of traumatic events into a coherent narrative is the significant focus of the therapy. Thereafter, the therapist should observe and ask the client about any essential elements of the story such as current emotional, cognitive, and behavioural reactions, and take these into account during the discussion. The discussion of the traumatic event is not concluded until a habituation of the emotional reaction is presented and reported by the client. However, this is unlikely to occur within a single session. The session is said to be at a safe point in the narrative, at the end of a traumatic event, once the therapist has confirmed that the client's arousal has diminished and that their emotional state has improved.

The significance of recording the narrative that is described in the session is that it provides an opportunity for the client to understand the details and chronology of the events highlight the fragmented and disorganised areas in

the story and possibly explore the narrative further at the next session. At the beginning of the next session, the narrative form is read to the client in order to ensure accuracy, expose the client to memories of the event, and elicit further information and support integration of the 'hot' and 'cold' memories. The time between the traumatic event and next traumatic event is briefly narrated after the re-reading of the previous narrative. This procedure continues until all traumatic events have been narrated and the affective responses to the memories have diminished. At the end of this juncture, a testimony of the client's life from birth to the present day is created by the client and therapist with sufficiently detailed narration of the stressful events. At the end of therapy, the client's aspirations and hopes for the future are discussed. The client also receives a written report about his or her biography which is signed by the all parties who have been involved in the therapy including the client, therapist and interpreter (Schauer et al., 2011). In the process of NET, hot implicit memories can be accessed by cool declarative memories. This allows the client to become habituated to the emotional response to the traumatic memory (Bichescu et al., 2007; Neuner et al., 2004).

#### **1.4.3.2 Narrative exposure therapy (NET) and PTSD**

According to the above review of PTSD and NET, PTSD is conceptualised as a result of psychological changes, following the experience of a traumatic incident. In this change, memories can be affected by the noradrenergic<sup>5</sup>

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<sup>5</sup> Areas of the body that produce or are affected by noradrenaline are described as noradrenergic. Noradrenaline is a molecule with multiple roles including as a hormone and a

response to stress. Life-threatening events, and the subsequent re-experiencing of these in PTSD, lead to stress, and this can significantly impair the functioning of the hippocampus<sup>6</sup>. Subsequently, the amygdala<sup>7</sup> is activated, resulting in an accentuated sensory representation of the incident. This relationship of the neural structures (amygdala and hippocampus) misappropriates, with the implication that there are differences between the memories for traumatic events and those for normal events. In the memories for traumatic events, the number of cues increases and the association between cues is stronger than normal. As a result of these differences, traumatic memories can be activated relatively easily. At the same time, the functioning of the hippocampus is reduced which means that the information is not retained in the memory. This can make it difficult for the individual to narrate the incident. Moreover, there is a lack of contextual information which can influence the individual to maintain a sense of current threat when the memory is activated (Neuner, Catani, et al., 2008). The individual is unable to provide a consistent, chronological account of incidents because the autobiographical memory is disrupted. Through these processes, it is clear how repeated or multiple events can lead to severe psychological disturbance. The fear networks increase and become activated through repeated

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neurotransmitter. As a stress hormone, noradrenaline affects parts of the brain, such as the amygdala, where attention and responses are controlled.

<sup>6</sup> The hippocampus belongs to the limbic system and plays important roles in the consolidation of information from short-term memory to long-term memory and spatial navigation.

<sup>7</sup> Considered part of the limbic system, the amygdalae perform a primary role in the processing and memory of emotional reactions.

experiences. They can also link to elements within the present context such as a threat to life or security.

#### **1.4.3.3 Evidence of the effectiveness of NET**

Robjant and Fazel (2010) showed that NET can be effective for people with PTSD following multiple traumatic events. The effectiveness of NET has been demonstrated with adults and adolescents in several randomised controlled trials (Neuner et al., 2004). For example, a study conducted in Uganda by Neuner et al. (2008) on 277 Rwandan and Somalian refugees divided and allocated the participants randomly into three groups: a Narrative Exposure Therapy group (NET), a trauma counselling group (TC), and a monitoring group (MG). Three assessments were conducted using interview measures of PTSD and self-report. These assessments were pre- and post-treatment, after 6 months. The results showed that in both the NET and TC groups, the treatments were effective, having a statistically significant effect on PTSD symptoms. Significantly, only 4% of participants dropped out of the NET groups whereas 21% dropped out of TC group. Another study was carried out in Uganda to evaluate the effectiveness of four NET sessions in reducing PTSD symptoms compared with supportive counselling (SC) and psycho-education (PE) as treatment methods. The PTSD symptoms of 43 Sudanese refugees were assessed. One year after treatment, the results showed that only 29% of the NET group still fulfilled PTSD criteria whereas 79% of the SC group and 80% of the PE group did (Neuner et al., 2004). Similarly, Bichescu et al. (2007) compared the effectiveness of four NET sessions and PE in reducing PTSD

symptoms and depression among people who had been victims of political detention and torture four decades ago in Romania. The PTSD symptoms were assessed using the Composite International Diagnostic Interview (CIDI) while depression was assessed using the Beck Depression Inventory (BDI), before treatment and after a 6-month follow-up. The NET group (n=9) presented a significant reduction in PTSD and depression compared with the PE group (n=9). Only 4 out of 9 in the NET group still had PTSD symptoms 6 months after the treatment compared to 8 out of 9 in the PE group. However, the results of this study might be affected negatively by the relatively small sample size. Halvorsen and Stenmark (2010) conducted a preliminary uncontrolled trial study for 16 torture survivors, 13 were males and 3 were females in Mid-Norway to evaluate the effectiveness of NET in reducing PTSD and depression. PTSD symptoms were assessed using the Clinical Administered PTSD Scale (CAPS) while depression was assessed using the Hamilton Rating Scale for Depression (HRSD). Sixteen torture survivors received 10 sessions of NET. The results showed that PTSD symptoms and depression reduced significantly from pre-treatment to the 6-month follow-up. However, there was a lack of a control group in this study which precludes definite conclusions regarding treatment effects (Halvorsen & Stenmark, 2010).

In Germany, a randomised controlled trial study examined the effectiveness of NET in reducing PTSD and depression. The PTSD symptoms and depression of 34 refugees were assessed before treatment. The participants were then

randomly divided in two groups, the NET group and the wait-list control (WLC) group. At a 4-month follow-up, PTSD and depression were re-assessed. The results showed that PTSD and depression symptoms decreased only in the NET group, while symptoms in the WLC group persisted. However, the majority of participants in this study took anti-depressants and neuroleptic medication, which might have affected the treatment results (Adenauer et al., 2011). Another randomised controlled trial study in Germany compared NET and Stress Inoculation Training (SIT). In SIT, the participant is taught different techniques to cope with presently occurring stressors and avoids focusing on the past or exposure to traumatic memories in order to obtain two clearly distinguishable treatments between NET and SIT. The PTSD symptoms of 28 participants who had experienced war and torture were assessed. The participants received 10 treatment sessions of either NET or SIT. The PTSD symptoms were assessed three times after treatment, at 4 weeks, 6 months and one year after treatment. The results showed that PTSD symptoms reduced significantly in the NET group only. However, the sample size was relatively small which may have affected the results (Hensel-Dittmann et al., 2011). Schaal, Elbert, and Neuner (2009) examined the efficacy of four NET sessions compared with a group adaptation of interpersonal psychotherapy (IPT). Twenty-six Rwandan genocide orphans were divided into two groups, the NET group (n=12) and the IPT group (n=14). Each group received 4 weekly sessions. PTSD symptoms and depression were assessed before treatment sessions, at a 3- and 6-month follow-up after treatment. The results showed

that only 25% of participants in the NET group fulfilled PTSD criteria compared to 71% in the IPT group at the 6-month follow-up.

A study in China using a randomised wait-list control was conducted by Zang, Hunt, and Cox (2012) to examine the effectiveness of four NET sessions with adult survivors of the 2008 Sichuan earthquake. Twenty-two participants were randomly divided in two groups, NET (n=11) and wait-list control (WLC) (n=11). PTSD symptoms, depression and anxiety, and general mental health were assessed before NET treatment. The participants in each group received 4 therapy sessions. They were assessed post-treatment, after 2 weeks, and then after 2 months. The results showed a significant decrease in PTSD symptoms, as well as depression and anxiety, and an improvement in general mental health. These results support the efficacy of NET in treating PTSD and comorbid PTSD symptoms. In contrast, the sample size is small and the follow-up time is relatively short, which can affect the results. Therefore, further studies should be conducted, taking the sample size and follow-up time into consideration.

A pseudo-experimental design study was conducted by Hadziosmanovic (2014) for 20 Bosnian survivors of war. Ten participants in the experimental condition completed the adapted McAdams (2007) narrative life interview, whereas 10 in the pseudo-control condition wrote about their experiences during the war in Bosnia. The participants were assessed at three time points: before the quasi-experiment started (T1), at 2 weeks follow-up post-interview (T2), and at 6 months follow-up (T3). The results showed a significant

reduction in PTSD symptoms after 2-weeks, but this result was not sustained at 6 months. A limitation however is that the sample size is small and only one session of the life story interview was administered.

A preliminary Randomised Clinical Trial study was conducted by Hijazi et al. (2014) for 63 Iraqi refugees in the US. Participants were randomly assigned to either brief NET (n=41) or WLC (n=22) in a ratio of 2:1 ratio. Three brief NET sessions were provided to the participants. PTSD, depressive and somatic symptoms and post-traumatic growth were assessed at baseline and at a 2- and 4-month follow-up. PTSD and depression symptoms were reduced after two months only. However, this result might be due to the number of sessions: only three were provided rather than the up-to-10 sessions that are typically provided with NET. Another reason might be associated with the severe and often long-standing trauma symptoms in the participants.

Turning to the study of children, few studies have been conducted to examine the effectiveness of NET for children with PTSD from exposure to war or a tsunami. For instance, a pilot study was carried out by Onyut et al. (2005) in Uganda. Six Somali children received 4 to 6 sessions of KIDNET, a child-friendly version of Narrative Exposure Therapy. PTSD symptoms and depression were assessed before treatment, after treatment and at a 9-month follow-up. The results suggest that a significant reduction in PTSD occurred after treatment. At the 9-month follow-up, only 2 of the 6 participants still fulfilled PTSD criteria. The depression remitted to non-clinical levels in all adolescents who had presented with depression before treatment. However, this study is not a

randomised control trial study and the sample size is notably small. This can preclude definite conclusions concerning treatment effects.

A randomised controlled trial study evaluated the effectiveness of KIDNET compared with meditation-relaxation (MED-RELAX) in 31 children who presented with PTSD symptoms after the 2004 tsunami in north-eastern Sri Lanka. The participants were allocated randomly to two group, KIDNET (n=16) and MED-RELAX (n=15). PTSD symptoms were measured before treatment, one month post-treatment and at a 6-months follow-up. The results showed a significant reduction of symptoms in both groups. However, at the 6-month follow-up, the KIDNET group's recovery rate was 81% compared with 71% in the MED-RELAX group. However, this study lacks a non-treatment group to control for spontaneous remission (Catani et al., 2009).

#### ***1.4.4 Summary***

Treatment section above reported that early intervention is recommended for traumatised people who work in risk environments, such as firefighters and emergency workers. The effective treatment of PTSD which used and recommended by NICE (2005) presented such as TFCBT and EMDR. Another treatment of PTSD for first responders was the PD. No evidence was found that single session individual psychological debriefing or group debriefing were significant in reducing PTSD. However, the result suggested that future studies should focus on an individual, group, and organizational factors.

An alternative short-term treatment of PTSD has been recommended such as NET. NET is effective in treating not only PTSD symptoms but also depression

and anxiety. Moreover, NET has been shown to have a significant effect in terms of reducing drop-out rates and treatment failures among participants. However, NET has not yet been used to treat firefighters, despite the fact that it was designed for use with refugees and other victims of war, and it can be used for a wide range of traumatic and stressful events. The aim of this study is to determine whether the use of NET among firefighters in Saudi Arabia results in a significant reduction in PTSD symptoms, as well as depression and anxiety.

There are several reasons of using NET for treating traumatised firefighter in Saudi Arabia. First, lack of psychological trauma care in Saudi Arabia, and a stigma surrounding psychological problems in Saudi culture, as well as the nature of firefighters work. Second, TF-CBT and EMDR need advanced training and might be long-time needed for delivering this type of therapy. Third, CBT may only be effective for certain kinds of people, namely those who are relatively intelligent, motivated, and able to cope with severe emotional trauma. Fourth, the empirical evidence for the efficacy of narrative interventions for reducing PTSD symptoms has been increasing over the last few years. Fifth, firefighters in Saudi Arabia work under circumstances that are complicated by cultural issues such as the stigmatisation of psychological problems and the lack of psychological support. A relatively simple process, NET has a number of benefits. It is short-term treatment; it is cost-effective; it is relatively easy to deliver training, and it can be administered to people of different cultures.

### ***1.5 Conclusion***

The above literature review has yielded several important findings about the relatively high prevalence rates for PTSD among firefighters. Understanding the firefighter's environment work and consequences of traumatic stress are two of the significant points in the review. Another point is the gaps existing in current studies and practice. This review also introduced the lack of mental healthcare in Saudi Arabia and lack of psychological support for firefighters. It discussed Saudi culture and background knowledge surrounding psychological support. It was argued that the coping strategies of firefighters need to be empirically studied in order to find the most effective intervention to help them in this situation. Based in the review, the following additional points can be highlighted.

Because firefighters work under a high level of risk and face a stressful work environment, PTSD symptoms and other psychological disorders such as anxiety and depression are prevalent in the firefighter population. However, little attention has been paid to providing sufficient mental healthcare in developing countries. Moreover, few published studies have evaluated the efficacy of interventions for first responders, whether in developed or developing countries.

In terms of PTSD theories, three main PTSD theories emphasise the processing of traumatic events: Emotional Processing Theory; Dual Representation Theory; and Ehlers and Clark's cognitive model. These PTSD theories explain disorganised and fragmented memory, missing contextual information, a

sense of the present threat, the lack of distinction between the traumatic events and current context. PTSD theories also point out that traumatic memory is the core of PTSD.

With regard to variables, some variables affect the beginning, maintenance, and severity of PTSD. The relationship between subjective indicators such as social support, coping strategies, and PTSD has not been studied longitudinally. Furthermore, few studies take into consideration the effect of treatment outcomes on perceived social support and coping.

Using interviews to explore the life background of the firefighters and how they became firefighters is a unique contribution to this thesis. The life storytelling reflects the fragmented memory and can inform the narrative issue as a treatment intervention for them.

Treatment guidelines recommend two types of therapy, namely, TF-CBT and EMDR for treating PTSD. However, they appear not to be simple and efficient enough to administer to first responders, and there may be a cultural disparity. Therefore, it is necessary to find an alternative treatment.

Narrative treatment has been applied in many empirical studies and there is evidence of its efficacy for treating PTSD symptoms and stress. One of the advantages of narrative treatment is its simplicity and accessibility which make it an acceptable and feasible treatment for first responders and in different cultures. Nevertheless, NET has not been used with firefighters or in

developing countries such as Saudi Arabia. Therefore, exploring the effectiveness of the NET in this context fills a gap in the literature.

### ***1.6 Study aims***

Based on the review of the literature, firefighters in Saudi Arabia have been suffering from several challenges which increase the likelihood of developing psychological problems such as PTSD depression and anxiety. These include the stressful work environment, the lack of psychological trauma care, their background about the psychological support, and cultural issues. Therefore, applying and evaluating a NET-based intervention for traumatised Saudi firefighters are an urgent need. In this study, it is hypothesized that NET will decrease PTSD symptoms and other psychological disorders such as depression and anxiety.

The study aimed to:

1. Investigate the prevalence rate of PTSD, depression and anxiety in Saudi firefighters using self-report scales.
2. Examine coping strategies, and social support.
3. Understand and explore the life stories of firefighters to inform the narrative.
4. Examine the effectiveness of NET among Saudi firefighters.

The following chapter outlines the research methodology applied in order to achieve the study's objectives. It describes and justifies the methodological

approach chosen. Suitable methods for providing data to examine the identified research questions are discussed.

## Chapter 2: Methodology

### *2.1 Overview*

This chapter focuses on the methodological and epistemological issues regarding the research design used to achieve the research goals described in Chapter 1. A mixed-methods approach was adopted to determine the following: (1) the ways in which Saudi firefighters have been affected by the traumatic events resulting from their work environment; (2) their qualitative experiences before and after becoming firefighters; and (3) the effectiveness of an intervention programme for reducing the PTSD symptoms and comorbidity. In order to address these questions, the data were collected using a range of methods, including a cross-sectional survey, a life-story interview, and a Randomised Controlled Trial (RCT). The cross-sectional survey aimed to investigate trauma incidents and trauma-related symptoms among Saudi firefighters, and to examine the association between such incidents and different factors including: depression, anxiety, coping strategies, and social support, as well as demographic variables such as age, years of service, education, and marital status. The life-story interview aimed to explore the life story details of each individual before and after becoming a firefighter, as well as inform the narrative intervention study. A RCT was used to examine the effectiveness of the narrative intervention, namely narrative exposure therapy (NET). This chapter discusses the conditions of the chosen research population and location, as well as the psychometric properties of the

measures and the interview completed by participants. It concludes with a discussion of ethical considerations.

## ***2.2 Rationale for the choice of methods***

In this section, the reasons for choosing to use both quantitative and qualitative methods are explained. Essentially, each approach offers different contributions to this study. Certain events and situational problems are best suited to a more quantitative analysis such as prevalence rate of psychological disorders from a large number of people. In addition, quantitative methods can result in authoritative survey data that show the relationships between diverse factors (Bullock, Little, & Millham, 1992). In contrast, more qualitative approaches can enable an in-depth understanding of individual meaning, the processes occurring within observed patterns of interrelated factors, and the context of behaviours. Participants' personal experiences and the different perceptions they may have of the same situation are best accessed through qualitative study (Mertens, 1998). Compared to quantitative study, in depth interviews allow more flexibility and the opportunity for the participants themselves to focus on the issues that they consider to be important. The benefits and drawbacks of both quantitative and qualitative approaches will be highlighted below.

### **2.2.1 Questionnaires**

To investigate the prevalence rate of traumatic events and trauma-related symptoms, five survey questionnaires were used. This method allows the collection of a large amount of data relatively quickly and cheaply. The

quantitative scales (SPTSS, HADS, Brief COPE, Social support) selected for this study have been used in many epidemiological studies because they are relatively easy to use (Coolican, 2009). There are several reasons why self-report scales were for this study. Self-report scales with flexibility way of distribution (e.g. post mail, e-mail, online...) can provide large quantity of data about the phenomenon being measured. They can also reflect human thought and cultural context as well as a wide range of psychological variables.

Because the data were collected from Saudi Arabia, travel arrangements were a significant time factor in this research. It was therefore necessary to use a relatively efficient and inexpensive method of data collection (Hunt, 1996). Questionnaires were chosen because they can be distributed to participants via email or sent to their homes for completion. In addition, they are standardised in terms of the psychometric properties such as reliability and validity and they can contain fixed-response options, such as a Likert scale, which are easy to enter into a database and subject to statistical analysis. A third reason for using self-report questionnaires is the confidentiality that they afford participants. In Saudi culture, seeking psychotherapy tends to be stigmatised (Koenig et al., 2014). Questionnaires are a suitable way to investigate psychological disorders because respondents can provide their answers confidentially and be assured of anonymity, as per the informed consent conditions of the study. In addition, many may prefer not to talk about their feelings to strangers. Consequently, self-report scales are essential

instruments for collecting data on a relatively large scale and providing numerical measures (Anastasi, 1997).

Questionnaires do have several disadvantages. The format and wording, as well as the sequence of the items of the self-report scales, may affect participants' responses. Furthermore, responses might be influenced by their motives of self-interest or social desirability, thereby introducing a source of bias (Kazdin, 1998). Another disadvantage of questionnaires is that they can capture a large range of individual differences, giving insight into the complex and often contradictory ways in which people think about the issues; yet this could make data analysis a fraught or complex process. There are also problems associated with measuring experiences associated with different perceived degrees of stress (Hunt, 1996). In the current study, two questionnaires (FTHS, Brief COPE) were developed by the researcher and a group of Saudi psychologists and psychiatrists who assessed the context of the Arabic version, while the other three questionnaires (SPTSS, HADS, Social support) in Arabic version have been widely used and validated in previous studies (El-Rufaie. & Absood, 1995; Jaber, 2012).

Overall, self-report questionnaires are helpful and efficient, enabling a large quantity of data to be collected relatively quickly. They can also provide an initial screen for any psychological problems in the population in question, thereby enabling us to better discern relationships between psychological variables.

### 2.2.2 Life-story interviews

Within psychology, qualitative methods have been borrowed from sociology and anthropology (Kirk, 1986). The most common strategy for collecting qualitative data is the interview. Growing in population and psychology in recent decades, (Richardson, 2002), qualitative approaches make it possible for researcher and participant to sit and speak to each other, face-to-face. This can directly affect the quality of the data in terms of the flow of information, and reconstructing this information during the interpretation phase. One aim of the qualitative research interview is to contribute conceptually and theoretically to the literature on a particular topic.

Interviews may be conducted either in a one-to-one context or in groups.

Whereas individual interviews can provide in-depth data about a topic from individuals, group interviews enable the interviewer to obtain a wider range of information but, because of the public nature of the interview process, this format is not as conducive to delivering as deeply into the individual (DiCicco-Bloom & Crabtree, 2006). Thus, the type of interview used has advantages and disadvantages.

Qualitative interviews are typically categorised as unstructured, semi-structured and structured. In structured interviews, the questions are pre-determined with the fixed order, without regard to the responses, while in unstructured interviews; there are a number of topics which the researcher needs to cover but no fixed questions. This gives the researcher the flexibility to take into account the different background knowledge, abilities, and

attitudes of the participants (Hunt, 1996). Whereas structured interviews can be analysed using both qualitative and quantitative methods, unstructured interviews are analysed qualitatively only.

In the present study, the life-story interview was used to obtain an understanding of participants' life stories. Life-story interviews are based on the meaning that life experiences hold for the interviewees (DiCicco-Bloom & Crabtree, 2006). This protocol was selected based on the results of the survey questionnaires, and these studies (the survey questionnaires and the life-story interviews together) were used to inform the final intervention study.

According to Sarbin (1986), an individual's experiences can be reflected through the narrative in diverse contexts such as war, refugee, natural disasters, health-related issues, and other experiences and stressful contexts. It can be difficult for an individual to make sense of the situation that they are in as a consequence of exposure to chronic stressors. This can lead to psychological problems such as PTSD among war veterans (Hunt, 1997).

A significant strength of the narrative method is the ease with which it can be used to inter-weave diverse components of an individual's life, such as personal and cultural experiences. A second advantage of using the narrative method is that the data collected can have a high level of authenticity, accuracy, credibility and trustworthiness, which can increase the validity of qualitative data (Creswell & Miller, 2000).

Nevertheless, Bordens and Abbott (2010) highlight some limitations of the narrative method. As the interview takes place in a social context, participants might be motivated to present themselves in a socially desirable manner, disclosing only filtered information, usually when discussing issues associated with social stigmas. Moreover, not all individuals are equally perceptive and articulate. In this study, the experiences of firefighters were compared in order to inform the narrative intervention.

Reflexivity is an important issue to take into consideration in any research. Within qualitative research, reflexivity focuses on the research process in relation to the subjectivity of the researcher (Pillow, 2003). This entails focusing on “how does who I am, who I have been, who I think I am, and how I feel affect data collection and analysis?” – that is, an acceptance and acknowledgment that “how knowledge is acquired, organized, and interpreted is relevant to what the claims are” (Altheide & Johnson, 1998, cited in Pillow, 2003, pp.176). Two types of reflexivity can be distinguished: personal and epistemological. Personal reflexivity refers to the construction of meaning in the research process that the researcher is aware of. In contrast, epistemological reflexivity refers to the different ways in which the research questions can be addressed, and how the analysis has constructed the data (Macbeth, 2001).

In qualitative research, reflexivity is common practice and can improve the quality and validity of the research (Mays & Pope, 2000). It achieves this by requiring an awareness of the other as well as self-awareness regarding the

research process (Chiseri-Strater, 1996). Another reason why it is important to take a reflexive perspective on the research is that the researcher in the present study is of the same ethnic, language, and religious identity as the participants. This commonality facilitated more openness in interacting with the participants and the possibility of gathering more detailed information about their traumatic experiences due to the mutual understanding and respect. During the research process, I made an effort to remain impartial and not express my own opinions to the research participants. Moreover, my interview questions were checked by my supervisor who does not share my identity-based connection to the Saudi participants before the interview has been piloted (Full details in Chapter 6 p152).

### ***2.3 Study design***

The research questions are addressed through conducting three different types of study. Study One is the cross-sectional survey, Study Two is the semi-structured interview, and Study Three is the RCT feasibility study.

Questionnaires were used in Study One and Three while Study Two used the life-story interview to collect data about each individual's life. The overall study aims and settings are presented in Table 2.1. The cross-sectional, a semi-structured interview, and RCT designs will be discussed and evaluated below.

**Table 2.1 Study setting**

<b>Study</b>	<b>Aims</b>	<b>Design</b>	<b>Tools</b>
1	<ul style="list-style-type: none"> <li>a. Estimating and comparing the prevalence rate of psychological morbidity of Saudi firefighters.</li> <li>b. Recognising the correlated factors of distress, identifying the predictors of PTSD symptoms.</li> <li>c. Screening and recruiting participants for the subsequent studies: the qualitative and intervention studies</li> </ul>	Cross-sectional	Questionnaire
2	<ul style="list-style-type: none"> <li>a. Obtaining information about the background and subjective core of each individual's life.</li> <li>b. Informing the narrative intervention.</li> </ul>	A semi-structured interview	Life-story interview
3	<ul style="list-style-type: none"> <li>a. Evaluating the effectiveness of NET (narrative exposure therapy) in Saudi firefighters with PTSD.</li> </ul>	RCT (waiting-list control)	Questionnaire

### 2.3.1 Cross-sectional design

A cross-sectional study evaluates samples selected from separate, distinguishable sub-groups within a population at the same moment in time. Survey questionnaires are arguably the most efficient method for gathering standardised, cross-sectional data from first responders. The questionnaires in the current study include two parts: demographic data and self-report scales. Difficulties with the cross-sectional design include the need to ensure group equivalence and independent samples, and its incapacity to identify maturational changes. Nevertheless, it is still the most appropriate strategy to achieve the primary research objectives of this study, namely, collecting

information about the participants and recruiting participants for the subsequent studies (Coolican, 2009), the narrative study and the intervention study.

### **2.3.2 Life-story interview**

One of the essential aspects of human nature is the telling of stories about the events that happened in our lives and the circumstances in which we have found ourselves. Through the universal forms of text, narratives can construct, interpret, and share experiences (Schiffrin, 1996). They can also be considered important for an individual to exist in the social world. Interest in narratives have been linked to the study of the self and identity (Dyer & Keller-Cohen, 2000). In interviews with PTSD patients, clinicians and researchers have observed that trauma memories are initially fragmented and disorganised. In addition, the ability to find meaning in life can be effected by traumatic events (Burnell., Coleman, & Hunt, 2010). There are numerous narrative analytical approaches. Some of them are focused on the life story as a whole while other are focused on the behaviour of the individual in the context of the socio-cultural environment, such as biographical and life-history approaches (Riessman, Kohler, 2002).

In the current study, the semi-structured interview schedule was adapted by the researcher to obtain an understanding of participants' life stories.

McAdams's (2008) life-story interview method was adapted for this study. The interview began with a narration of the events that have occurred throughout the participant's life; life experiences from childhood until the present were

involved. These involved the articulation of pains, joys, and sorrows experienced during the events. Life event such as peaks, nadirs and turning points were identified, while the influences in life, spiritual, religious, and political values were critically discussed and included in the interview. Participants' feelings at the end of the interview were discussed in the final part of the interview (See Appendix D, for details of the life-story interviews).

### **2.3.3 Randomised controlled trial (RCT) design**

An RCT was applied in the intervention study to evaluate the effectiveness of a narrative intervention among traumatised Saudi firefighters. RCT is a relatively accurate method for determining whether a cause-effect relation exists between treatment and outcome, and for assessing the effectiveness of a treatment (Sibbald & Roland, 1998).

Other study designs, including non-randomised controlled trials, can discover associations between an intervention and an outcome, nevertheless they cannot rule out the possibility that the association was caused by a third factor linked to both intervention and outcome. Random allocation ensures no systematic differences exist between intervention groups in factors, known and unknown, that might affect the outcome. Double blinding ensures that the preconceived views of participants and clinicians cannot systematically bias the assessment of outcomes. Although double blinding is not always possible or appropriate with psychological interventions so single blinding is used.

In the current RCT study, participants were randomly allocated to groups. All intervention groups are treated identically except for the experimental treatment. Until the study is completed, the researcher and participants should remain unaware of which treatment was given. Because this study was conducted by a single researcher only, this double-blind precaution was not possible.

Even though randomised controlled trials are powerful tools, they pose some limitations related to ethical and practical concerns. A number of disadvantages of RCT are recognised in the context of psychotherapy for trauma (Hunt, 2012). For example, it is not feasible to have a fully blind trial of a psychotherapy intervention as the patient is likely to know whether or not they are receiving therapy. In addition, recruitment bias is difficult with traumatised people; many do not want to go through a 'talking therapy' because they do not want to face their memories. Moreover, therapies for traumatic stress are often used in dangerous environments such as places where there has been a natural disaster or in war zones, and it is difficult to conduct a well-controlled study (Hunt, 2012).

In the present study, an untreated control condition and a waiting-list control group (WLC) were used, following other studies of psychological intervention (Katz, 2010). A significant point about using a waiting-list control group is that they constitute the untreated comparison group, but they are given the opportunity to obtain the intervention later.

A limitation of waiting-list control (WLC) groups is the likelihood of improvement among both the treatment and the control group. The waiting-list group is out of the therapist's control during the treatment time of the control group. In contrast, the expectation of benefit is usually connected with placebo conditions. The control group is not receiving a treatment which means that there is no reason to expect positive change. However, because NET is a short-term therapy, the waiting period for the present study is three weeks only. A short waiting time helps to reduce the possibility of a difference between the two groups and minimises any bias caused by the allocation. Despite these limitations, RCTs remain a significant method for examine the effectiveness of a therapy or treatment.

#### ***2.4 Study populations***

The population of this study is firefighters in the west region of Saudi Arabia. Located in western Saudi Arabia, the Makkah Province is the most populous province of Saudi Arabia. The general directorate of civil defence in the west region of Saudi Arabia has three branches in three cities, Makkah, Jeddah and Taif. Jeddah city has 33 fire stations, Makkah city has 20 and Taif city has 20. According to the Civil Defence Department in Makkah Province, 2,190 people work as firefighters in these three cities in the time of conducting this study. A primary reason for selecting firefighters in Saudi Arabia to study NET for treating PTSD is that they are more likely than individuals in other occupations to experience PTSD symptoms and other psychological disorders. First, according to the Saudi Ministry of Hajj, some four million people visit Makkah

each year for doing Hajj, during the hajj time, and around ten million people visit Makkah city during the year for doing Umrah (Hajj Ministry, 2007). Second, Makkah province suffered from heavy floods twice, in 2009 and 2011. Civil defence officials described these floods as the worst in 27 years (Interior Ministry, 2005). Third, civil defence has more responsibility in Makkah Province which makes it more likely that firefighters have stressful work and a high probability of being exposed to multiple traumatic events. Finally, there are clear deficits in mental health care among Saudi firefighters, and no psychologist trauma care. This is related to the lack of qualified mental health professionals and the stigma attached to mental illness (Saeed Wahass & Gerry Kent, 1997). The sampling method used in each study will be presented in subsequent chapters.

## ***2.5 Measurements***

Above, the researcher justified the use of self-report survey questionnaires and life-story interviews in the current research. The questionnaires included both background information about the participants and psychological measures (Appendix C).

With regard to background information, demographic variables included: name, age, years of service, level of education, marital status, contact details, and any past history of seeking therapy.

In terms of psychological measures, some risk factors for PTSD were identified in the literature review, including: trauma history, coping strategies, social support, depression and anxiety.

The traumatic events were measured using the Firefighters Trauma History Screen (FTHS) (see details in Chapter 3), while post-traumatic stress symptoms were measured using the Screen for Post-traumatic Stress Symptoms (SPTSS) (Carlson, 2001). Coping skills were measured using the Brief COPE scale (Carver, 1997), and social support using the Multi-dimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988). Jaber (2012) has assessed and validated the reliability of the Arabic version of these scales. Depression and anxiety were measured using the Hospital Anxiety and Depression Scale (HADS) (HADS; Zigmond & Snaith, 1983). The reliability of the Arabic version of HADS was assessed and validated by El-Rufaie and Absood (1995). The estimated time required to administer all these scales was one hour. The details and psychometric properties of all these scales are presented below.

### **2.5.1 Firefighters Trauma History Screen (FTHS)**

Several instruments have been devised to evaluate trauma history. However, they do not cover the wide range of traumatic event that firefighters might experience in Saudi Arabia. Therefore, it was necessary to develop a new checklist to assess the trauma history for Saudi firefighters (see full details in Chapter 3).

### **2.5.2 Scale of Posttraumatic Stress Symptoms (SPTSS)**

Several assessment methods have been used to measure PTSD; diagnosis and screening. A large number of scales have been used to measure PTSD and associated symptoms in various populations and language. For instance, Post Traumatic Stress Disorder Checklist (PCL) developed by Weathers et al (1993) as a 17-item self-report scale. Another scale which has been used widely is the Post-Traumatic Stress Diagnostic Scale (PDS), a 49-item measure developed and validated by Foa et al (1997). The Impact of Event Scale - Revised (IES-R) is another common scale developed by Horowitz, Wilner & Alvarez (1979) as a 22-item measure examining subjective reporting of traumatic events. Another Scale for assessing the prevalence rate of PTSD symptoms is the Scale of Posttraumatic Stress Symptoms (SPTSS) developed by Carlson (2001) as a 17-item self-report. All the measures reported above have demonstrated good reliability and validity across different populations.

In the current study, the SPTSS scale has been chosen because it is the only self-report scale accessible in Arabic version language. The SPTSS is based on DSM-IV PTSD criteria and was a valid and reliable instrument. In addition, it is used to measure symptoms without a need to link them to a single event, and with people who have experienced multiple traumatic events (Lapierre, Schwegler, & LaBauve, 2007).

The Arabic version of the SPTSS brief scale was validated by Jaber (2012). The scale comprised 17 items which closely match the PTSD symptoms criteria in DSM-IV, and are scored on a 5-point Likert scale from not at all (0) to

extremely (4). In terms of the reliability of this scale, Cronbach's alpha was used to indicate its internal consistency. The scores were .90, .84, .82, and .67 for the total scale, re-experience, avoidance, and hyper-arousal subscales, respectively. Test-retest reliability provided scores of .83, .80, .78, and .77 for the total scale, and the re-experiencing, avoidance, and hyper-arousal subscales respectively (Jaber, 2012). For the current study sample, Cronbach's alpha scores indicated acceptable internal consistency, being .90, .80, .78, and .73 for the total scale, re-experience, avoidance, and hyper-arousal subscales respectively.

### **2.5.3 Hospital Anxiety and Depression Scale (HADS)**

Depression and anxiety were measured using the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). It is a brief measure, and in this study was limited to anxiety and depression because both disorders are the most common mood disorders. The HADS scale has 14 items: seven items for anxiety disorder and the other seven for depression disorder. Each item has a choice of four responses which are scored from 0 to 3.

HADS has been widely used for both general populations and patient samples (Caci et al., 2003; Costantini et al., 1999; Crawford, Henry, Crombie, & Taylor, 2001). HADS was originally developed for people aged between 16 and 65 (Zigmond & Snaith, 1983). In addition, HADS have been developed in different language and population (Caci et al., 2003; Crawford et al., 2001; El-Rufaie. & Absood, 1995; Muszbek et al., 2005). Most of the previous studies have been

extensively validated in a variety of adult populations, with well-documented good measurement properties.

The reliability of the Arabic version of HADS has been assessed by (El-Rufaie. & Absood, 1995). A sample of 217 patients attending a primary health care centre in the United Arab Emirates was assessed, and a Cronbach's alpha of 0.78 for depression and 0.87 for anxiety was found. Scores above 8 in subscales indicated "probable anxiety" or Scores above 6 in subscales indicated "probable depression" were suggested if the researcher's objective is to estimate the prevalence rate with sensitivity of .66 and .70 respectively (El-Rufaie. & Absood, 1995). For the current study sample, Cronbach's alpha scores indicated acceptable internal consistency, being .76, and .65 for anxiety and depression respectively.

#### **2.5.4 Brief COPE (BC)**

Brief COPE was assessed by using Jaber's (2012) Arabic version BC scale. This version of the Brief COPE has 20 items measuring four coping strategies: seeking support coping strategies, active coping strategies, non-problem-focused coping strategies, and substance use factors. Cronbach's alpha scores were .82, .79, .67, and .70 for seeking support coping strategies, active coping strategies, non-problem-focused coping strategies, and substance use factors, respectively.

In the current study, the researcher re-assessed the reliability of the Arabic version in a sample of Saudi firefighters (see full details in Chapter 3). The reason for re-assessing the Arabic version is that an evaluation study is being

conducted at Nottingham University, UK, in order to use the Brief COPE across different cultures and countries, determining its underlying structure. The data from the Saudi sample may contribute to this on-going research as well as determine the strategies that individuals use to manage and cope post-trauma.

### **2.5.5 Social Support scale**

Social support has been measured by using various scales. For example, Social Support Questionnaire containing of 6 items to measure perceived support has been developed by Sarason et al (1983) . Another social support resources scale which is the social support behaviors (Ss-B) scale comprised of 45 items has been developed by Vaux, Riedel and Stewart (1987) to assess the social support received from family and friends in five modes of support, such as emotional support, socialising, practical assistance, financial assistance, and advice or guidance. Canty- Mitchell and Zimet (2000) validated a scale consisting of 12 items to measure perceived support from family, friends, and significant others. Social support scale contains 13 items and aims to measure three sources of social support, namely, family, friends, and governmental and non-governmental organisations (GNGO) has been developed in Iraq by Jaber (2012). Most of social support scale mentioned above were based on different aspects; the support network, the type of support, and satisfaction with support.

in the current study, social support was assessed by using Jaber's (2012) because it is only the Arabic version accessible. A four-point Likert scale was

used, with 0 = 'Not at all', 1 = 'A little', 3 = 'Moderate', 4 = 'Very much,' for each source. Cronbach's alpha was 0.95, 0.97, and 0.95 for family, friends, and GNGO, respectively (Jaber, 2012). For the current study sample, Cronbach's alpha scores indicated acceptable internal consistency, being .95, .94 and .93 for family, friends, and GNGO respectively

## ***2.6 Data collection***

In the first study, the cross-sectional survey questionnaire, five self-report questionnaires were used to collect the data, namely: the Firefighter Trauma History Screen (FTHS), the Screen for Posttraumatic Stress Symptoms (SPTSS) (Carlson, 2001), the Hospital Anxiety and Depression Scale (HADS) (El-Rufaie. & Absood, 1995) the Brief COPE (BC), and the Social Support scale (Jaber, 2012). Civil departments in Taif city collected the data from the participant voluntarily through the mail exchange process between the department and the fire stations. The department were instructed about the study aims and procedures. Then, the researcher received the questionnaires from the Civil departments in Taif city. In both Makkah and Jeddah cities, the data were collected by the researcher who distributed the questionnaires from the fire stations that chosen in this study.

In the second study the qualitative aspect, namely, the life-story interview, the participants were contacted by telephone and invited to participate in this study. All the interviews were conducted by the researcher face to face and were recorded by using audio-recording.

With regard to the third study, the NET intervention, traumatised firefighters who agreed to participate in this study were assessed five times; first, with conduct baseline tests for all firefighters with full PTSD (T1); second, with the NET and the WLC groups assessed after the NET group treatment (T2), after the WLC group treatment (T3), after 3 months (T4) and then at a six-month follow-up (T5). The questionnaires were distributed by the researcher to collect the data in T1 and T2 whereas the data in T3 and T4 were collected through an online survey.

The recruitment procedures of the participants for each of the three studies will be described in subsequent chapters under the participant section.

Finally, statistical analyses were conducted using SPSS 20.0 to analyse the quantitative data and examine the effectiveness of NET, while NVIVO 10 software was used to analyse the life-story interviews. Detailed analyses of each study will be presented in the subsequent chapters.

## ***2.7 Ethical considerations***

Recruiting human participants, this study received ethical approval from the Ethics Committee of the Institute of Work, Health & Organisations (I-WHO) at the University of Nottingham, UK (see Appendix A). The details and procedures of this study were discussed and approved by the Civil Defence Department in Saudi Arabia, before commencing the application for ethical approval.

One ethical concern of this study is that between the time of responding to the self-report scales about traumatic stress and the life-story interview, and attending the NET sessions, distressful feelings might have been evoked in the firefighters.

With regard to such distressful feelings, the Mental Health Consultation Centre in Taif city agreed to provide psychological consultation to any the participants if required. In terms of confidentiality, consent forms detailing participants' numbers and their names were kept separately and were linked with the scores by the code numbers only. All data and interview recordings were kept in a secure and safe place.

Participants were given the information sheet to keep while the consent forms were returned (Appendix B). The information sheet included the purpose of the study (to identify effective ways of reducing the PTSD or other symptoms suffered by Saudi firefighters and to improve their coping strategies), the study procedures (a survey questionnaire, a life-story interview, and an intervention), and the variables of interest, namely: traumatic events, post-traumatic stress symptoms, depression and anxiety symptoms, coping strategies, and social support. Participants were informed that those who met the study's inclusion criteria would be asked to take part in the life-story interview and experiment (the intervention). A contact telephone number and email address were included on the information sheet. The consent form was presented on headed paper to the participants to sign

before participating in the study. The life-story interview was recorded and transcribed in full by the researcher.

The experiment included several NET sessions of 60-90 minutes' duration over a period of 3-4 weeks. Both the NET and the WLC groups were assessed before and after attending the NET sessions, after three months, and then at a six-month follow-up. These were administered by the researcher. The benefits and risks of participating in this study were also presented to participants. The benefits are that participation in this study may help researchers to develop methods to help traumatised firefighters in Saudi Arabia to deal with traumatic experiences. Personally, participants might obtain new information about coping with their trauma. As for the risks, it was explained that in responding to the questionnaires, the life-story interview and the experiment, some distress may be experienced; this is usually temporary but if not, they were invited to call the researcher or the Mental Health Centre. Finally, participants were informed that they were free to withdraw their consent and discontinue participation at any time, before the data analysis stage, without explanation and without incurring any negative consequences. They were also informed that their participation in this study is confidential, anonymous and voluntary, and that the findings from this study might be published.

### ***2.8 Chapter summary and conclusion***

This chapter presented and discussed the rationale for the chosen research methods. It was argued that three distinguishable studies are required to address the range of research objectives, namely: the cross-sectional survey,

the narrative interview, and the randomised controlled trials. The population and research location were described, followed by a discussion of the questionnaires, interview, intervention, and ethical considerations. Further details about the participants, the research design, the measures, and the analytical procedures for each of the three studies will be described in subsequent chapters. The following chapters consider the development of scales.

## Chapter 3: Scale development

### *3.1 Introduction*

This chapter presents the first study of this research programme focusing on the development of the self-report questionnaires. Two self-report instruments were validated. One instrument was a checklist to evaluate the trauma history of Saudi firefighters, while the other was a coping strategies scale.

As stated in Chapter 1, the main aim of this study was to develop and examine the effectiveness of Narrative Exposure Therapy (NET) for Saudi firefighters. Risk factors for PTSD have been identified in the literature review (Chapter 1). These risk factors included: trauma history, coping strategies, and social support, depression and anxiety. In addition, relevant demographic variables were found to include: age, years of service, marital status, and level of education. A review of Arabic self-report scales of PTSD symptoms and risk factors in this studies showed that appropriate scales with validation data were available and accessible, such as the scale for PTSD symptoms, coping strategies, and social support, and depression and anxiety. However, a trauma history screen for firefighters was not available. Thus, the present study aims to fill this gap in the literature. In addition, a coping strategies scale was used and validated in this study because of an evaluation study being conducted at the University of Nottingham, UK, on the use of the Brief COPE scale across different cultures and countries, to determine its underlying structure.

Therefore, data from a Saudi sample would contribute to this on-going research. The first section of this chapter discusses the validation of the trauma history screen checklist. In the second part of this chapter, I discuss the validation of the Brief COPE scale.

### ***3.2 Validation Study One: Firefighters Trauma History Screen (FTHS)***

In this study, the trauma history checklist for Saudi firefighters has been developed and evaluated by the researcher in order to use in the main study.

#### **3.2.1 Method**

##### **3.2.1.1 Participants**

First, numbers were assigned to the seven fire stations centres on Jeddah city. Then, two numbers were randomly drawn from a box. These were for the west and east centres in Jeddah city. From these two centres, 60 firefighters were selected randomly, 30 from each fire station, after their managers gave consent for them to be invited to participate in this study. The Information Sheet and Consent Forms were distributed to the prospective participants. The purpose of the study was explained to the potential participants by providing an information sheet to them, who subsequently signed the consent form if they agreed to take part. Sixty participants were asked to respond to the checklist, and of these 40 participants consented and responded to the checklist. The survey was conducted in January 2012. All 40 were male, with an age range of 22 to 49 years (mean =  $28.97 \pm 6.12$ ). Their years of services

ranged from 2 to 29 years ( $8.20 \pm 5.9$ ). The socio-demographic characteristics of the participants are shown below in Table 3.1.

**Table 3.1: Socio-demographic characteristics of participants (n=40)**

<b>Demographical variables</b>	<b>N</b>	<b>%</b>
<b>Gender</b>		
Male	40	100
<b>Education</b>		
Secondary school	2	5
High school	29	72.5
Undergraduate	9	22.5
<b>Marital status</b>		
Single	4	10
Married	36	90
<b>Age</b>	<b>M</b> 28.97	<b>SD</b> 6.12
<b>Years of service</b>	8.20	5.90

**Note:** Secondary school (ages 12–15); high school (15-18) in the KSA the same as secondary school in the UK; undergraduate in the KSA is the same as tertiary education in the UK.

### 3.2.1.2 Procedure

The questionnaire was orally administered face-to-face by the researcher, who is a native Arabic speaker. Participants were informed that all scale items were focused on traumatic events to ensure that the latent psychological variables (coping strategies, social support, depression and anxiety etc.) were associated with exposure to traumatic events. The duration of the questionnaire administration ranged from 10 to 15 minutes. Detailed

procedures for using and validating each instrument are presented in the following sections.

### ***3.3 Developing and Evaluation of Firefighters Trauma History Screen (THS)***

Many tools have been designed and used to evaluate an individual's Trauma History Screen (THS). These measures are commonly referred to as trauma exposure measures. However, most of these measures do not assess whether the traumatic events or stressors (TS) are associated with significant or lasting psychological or post-traumatic distress (PTD) (Carlson et al., 2011). For example, the Live Event Checklist (LEC) (LEC:Gray, Litz, Hsu, & Lombardo, 2004), the Trauma History Screen (THS) (THS:Carlson et al., 2011), and the Baghdad Trauma History Screen (Jaber, 2012). Furthermore, they do not cover the range of traumatic events to which firefighters have been exposed in Saudi Arabia. Accordingly, it was necessary to develop a new checklist to assess the trauma events history of Saudi firefighters that is (a) of an easy reading level, (b) brief to complete, and (c) does not need respondents to make complex judgments.

The Firefighters Trauma History screen (FTHS) is a questionnaire that was derived and developed from two checklists. The first one is the Life Event Checklist (LEC) (Gray et al., 2004); this checklist was developed by the US National Centre for PTSD concurrently with the Clinician-Administered PTSD Scale (CAPS) to facilitate the diagnosis of PTSD. The items of the LEC were generated through the following: inspection of existing Potentially Traumatic

Events (PTE) measures; review of the PTSD literature to enable the identification of incidents known to culminate in PTSD; and consultation with researchers and clinicians possessing considerable expertise in PTSD. The LEC has 17 items, shown in Table 3.2; 16 of these enquire about the experience of 16 different Potentially Traumatic Events (PTEs) resulting in PTSD, and one item enquires about other stressful events not captured by these 16 items (Gray et al., 2004). The second checklist that was used to develop the Firefighters Trauma History screen (FTHS) is the Trauma History Screen (THS) checklist (Carlson et al., 2011). The THS checklist was developed by Carlson et al. (2011) to provide a brief and easy self-report measure of exposure to High Magnitude Stressor (HMS) events as well as events associated with significant and persistent post-traumatic distress (PPD). Shown in Table 3.3, it has 14 items that assess the frequency of HMS and PPD incidents, and provides detailed information about the events (Carlson et al., 2011).

The FTHS was designed to measure the traumatic events to which Saudi firefighters are exposed. The items of both checklists – the Live Event Checklist (LEC) and the Trauma History Screen (THS) checklist – were first translated into Arabic by the researcher and two Arabic experts separately (one was a psychologist while the other has a PhD in the English language). Direct translation of an instrument from one language to another does not guarantee content equivalence of the translated scale (Brislin, 1970; Sechrest, Fay, & Zaidi, 1972), and the cultural difference might cause diverse understandings and explanations the items. Therefore, Brislin's back

translation model was used (Brislin, 1970) and conducted pre-tests in the targeted population to make sure they could understand the meaning of items appropriately.

To create one version, the translations from these three sources were compared and integrated, with some repetitious items excluded and other items merged together. This resulted in the new Arabic checklist, comprised of 15 items which can be used to evaluate 15 types of events experienced by Saudi firefighters. Items number 1, 2, 3, 7, 10, 11, and 15 of the FTHS were selected from the LEC checklist, as shown in Table 3.2, while items number 4, 5, 6, 8, 9, 12, 13, and 14 were selected from the THS checklist, shown in Table 3.3. To ensure that the Arabic version was understandable and readable, the contents of the Arabic items were discussed with a group of specialists from Saudi Arabia within the fields of psychology and psychiatry (one psychiatrist, one psychologist, one occupational psychologist, and one development psychologist), as well as with a sample of five Saudi experts in firefighting from the province of Makkah in Saudi Arabia. During this review of the checklist, the participants were asked to explain the items, and the contents of items was amended or reworded if the reviewers disagreed about the English version, until the contents show the maximum possible match between the Arabic and English meaning.

The Arabic checklist was developed to measure traumatic events, whether these events had happened to the participants themselves and/or to their family members or friends. It also measures events that individuals have

witnessed the number of incidents, to which they were exposed, and their reactions and feelings of fear and helplessness (emotions), and perceived threat. The eight expert firefighters in the discussion group were then asked to respond to the new checklist in terms of the traumatic events to which they were exposed as well as their associated emotions. Following the outcome of this group discussion, the checklist was finally adapted and re-organised.

**Table 3.2: The Life Events Checklist (LEC)**

<b>Events</b>	
<b>1</b>	Natural disaster (for example, flood, hurricane, tornado, earthquake).
<b>2</b>	Fire or explosion.
<b>3</b>	Transportation accident (for example, car accident, boat accident, train wreck, plane crash).
<b>4</b>	Serious accident at work, home, or during recreational activity.
<b>5</b>	Exposure to toxic substance (for example, dangerous chemicals, radiation).
<b>6</b>	Physical assault (for example, being attacked, hit, slapped, kicked, beaten up).
<b>7</b>	Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb).
<b>8</b>	Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm).
<b>9</b>	Other unwanted or uncomfortable sexual experience.
<b>10</b>	Combat or exposure to a war-zone (in the military or as a civilian)
<b>11</b>	Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war).
<b>12</b>	Life-threatening illness or injury.
<b>13</b>	Severe human suffering.
<b>14</b>	Sudden, violent death (for example, homicide, suicide).
<b>15</b>	Sudden, unexpected death of someone close to you.
<b>16</b>	Serious injury, harm, or death you caused to someone else.
<b>17</b>	Any other very stressful event or experience.

**Table 3.3: The Trauma History Screen (THS)**

<b>Events</b>	
<b>1</b>	A really bad car, boat, train, or airplane accident.
<b>2</b>	A really bad accident at work or home.
<b>3</b>	A hurricane, flood, earthquake, tornado, or fire.
<b>4</b>	Hit or kicked hard enough to injure - as a child.
<b>5</b>	Hit or kicked hard enough to injure - as an adult.
<b>6</b>	Forced or made to have sexual contact - as a child.
<b>7</b>	Forced or made to have sexual contact - as an adult.
<b>8</b>	Attack with a gun, knife, or weapon.
<b>9</b>	During military service - seeing something horrible or being badly.
<b>10</b>	Sudden death of close family or friend.
<b>11</b>	Seeing someone die suddenly or get badly hurt or killed.
<b>12</b>	Some other sudden event that made you feels very scared, helpless, or horrified.
<b>13</b>	Sudden move or loss of home and possessions.
<b>14</b>	Suddenly abandoned by spouse, partner, parent, or family.

Some of the items were merged. For instance, 'Hit or kicked hard enough to injure as a child' and 'Hit or kicked hard enough to injure as an adult' were merged in a single item: 'Hit or kicked hard enough to injure as a child or an adult'. The items 'Forced or made to have sexual contact - as a child' and 'Forced or made to have sexual contact - as an adult' were also merged into a single item: 'Assault or attempted sexual assault'. The LEC item 'Life-threatening illness or injury' was divided into two items: 'Exposed to serious injury at work' and 'Life-threatening illness'. The LEC item 'Loss of a home or possessions suddenly as a result of a natural disaster' was added to 'economic disaster', and the item became 'Loss of a home or possessions suddenly as a result of a natural or economic disaster'. The checklist was firstly written in Arabic and then translated into English. Table 3.4 shows the list of traumatic incidents integrated as the checklist of trauma history screen questionnaire.

**Table 3.4: List of Traumatic Events: The final scale**

<b>Events</b>	
<b>1</b>	Transportation accident (e.g., car, boat, train, bicycle, motorbike).
<b>2</b>	Serious accident at work, home, or during recreational activity.
<b>3</b>	Natural disaster (e.g., flood, earthquake).
<b>4</b>	Hit or kicked hard enough to injure as a child or an adult.
<b>5</b>	Assault or attempted sexual assault.
<b>6</b>	Attacked with a gun, knife, or weapon.
<b>7</b>	Exposed to toxic substance (for example, dangerous chemicals, radiation).
<b>8</b>	During service in the civil defence sector - seeing very violent events.
<b>9</b>	Seeing someone die suddenly or get badly hurt or killed.
<b>10</b>	Exposed to serious injury at work.
<b>11</b>	Life-threatening illness.
<b>12</b>	Sudden death of close family or friend.
<b>13</b>	Loss of a home or possessions suddenly as a result of a natural or economic disaster.
<b>14</b>	Suddenly abandoned by a dear friend or a family member or spouse
<b>15</b>	Any other very stressful event or experience.

### **3.3.1 Face validity**

Face validity of the Arabic checklist was assessed by the group of five specialists from Saudi Arabia, mentioned above, within the fields of psychology and psychiatry (one psychiatrist, two clinical psychologists, one occupational psychologist, and one development psychologist). A meeting was arranged with the researcher and five of the expert firefighters to discuss the incidents included in the FTSH and determine whether they cover nearly all of events experienced by Saudi firefighters, and whether the emotions included occurred in response to the traumatic incidents. They were asked to evaluate this checklist and determine to what extent it represented the traumatic events experienced by firefighters in Saudi Arabia. All of them

agreed that the events in the list were widespread and that the list could be used to measure the history of traumatic exposure among Saudi firefighters.

### **3.3.2 Reliability**

The test-retest reliability of the FTHS was assessed by re-administering the scale to a sample of 22 firefighters who had been selected randomly from the original sample of 40, with a time interval ranging from 15 to 20 days. The correlation coefficient was .75 for the reported exposure to traumatic events, and .71 for the related emotions (feelings of fear, horror, and helplessness), indicating that the FTHS was internally consistent (see Appendix C, p313) for the final version of the scale).

## ***3.4 Validation Study Two: The Brief COPE scale***

As stated at the beginning of this chapter, a group of researchers at The University of Nottingham have been engaged in evaluating the Brief COPE scale across diverse cultures and countries in order to determine its underlying structure. Validation of the Brief COPE scale was conducted in the present study in order to contribute to this ongoing research.

### **3.4.1 Method**

#### **3.4.1.1 Participants**

The survey was conducted in August 2012 among 200 Saudi firefighters who completed the questionnaire. They were selected randomly from the west region (Makkah Province) of Saudi Arabia following the three stages: 1) select four firefighter centers from each city (Makkah, Jeddah, Taif), 2) select one fire station (unit) from each center, 3) all firefighters in the fire station (unit)

were asked to participate. The first two stages were via a simple random way. Numbers were assigned to the centres and fire stations. Then, the numbers were selected from a box. Their characteristics were described in Chapter 2, while the socio-demographic characteristics of participants are summarised in Table 3.5. The age range of the sample was 19 to 50 years. Their years of services ranged from 1 to 29 years.

**Table 3.5: Socio-demographic characteristics of participants (n=200)**

Demographical variables	N	%
<b>Gender</b>		
Male	200	100
<b>Education</b>		
secondary school	26	13
High school	136	68
Undergraduate	38	19
<b>Marital status</b>		
Single	43	21.5
Married	157	78.5
	<b>M</b>	<b>SD</b>
Age	31.52	6.75
Years of service	10.57	6.50

**Note:** Secondary school (ages 12–15); high school (15-18) in the KSA the same as secondary school in the UK; undergraduate in the KSA is the same as tertiary education in the UK.

The questionnaire was orally administered face-to-face by the researcher (myself), who is a native Arabic speaker. The duration of the interviews ranged from 15 to 20 minutes.

### 3.4.2 Brief COPE

A variety of self-report scales have been used to measure coping strategies. For instances, a 19-item scale was used to assess the coping skills of nurses who experienced trauma in the workplace (Niiyama et al., 2009). A 29-item scale was developed which included four categories of coping behaviours (Brodzinsky et al., 1992). Valentiner, Foa, Riggs, and Gershuny (1996) developed a scale of 26 items to measure coping skills in women who had experienced sexual and nonsexual assault. The Brief Approach/Avoidance Coping Questionnaire, consisting of 12 items, was developed and used by Finset et al. (2002).

Carver's (1997) Brief COPE scale has been widely used to measure strategies used to cope with both stressful events and traumatic stress. It has 14 subscales with two items in each scale; Carver (1997) stated that this was because participants became impatient as a consequence of the redundancy and length of the original version, which has 60 items. Responses to the items were rated on a four-point Likert scale, with 1 = 'I haven't been doing this at all', 2 = 'I've been doing this a little bit', 3 = 'I've been doing this a medium amount' and 4 = 'I've been doing this a lot'.

In addition, The Carver's (1997) Brief COPE has been used commonly in English and other languages. In a sample of Malaysian women with breast cancer undergoing treatment, Yusoff (2010) examined the psychometric properties of the English version. He found that the Brief COPE was valid and reliable when used with this population. The psychometric properties of a

Spanish version and an English version of the Brief COPE were assessed by (Perczek, Carver, Price, & Pozo-Kaderman, 2000). They recruited 148 undergraduate students (101 women, 47 men) at the University of Miami, USA, who are English-Spanish bilingual. They found that the Spanish version subscales had Cronbach's alpha scores higher than those of the English version, which ranged from .62 to .94 and .57 to .93 respectively.

Various studies have examined the structure of Brief COPE. For instance, in a sample of French-Canadian women with breast cancer, the factor structure of a French version of the Brief COPE was assessed (Fillion, Kovacs, Gagnon, & Endler, 2002). The result indicated a structure of eight factors:

disengagement, self-distraction, active coping, using emotional social support from husband/partner, using emotional support from friends, religion, humour, and substance use (Fillion et al., 2002). Another study was carried out in a general French population to validate another French version of the Brief COPE. Muller and Spitz (2003) recruited 1,834 university students who responded to the Brief COPE in terms of perceived stress, self-esteem, and psychological distress measures. The factor analysis indicated an adequate fit between the expected theoretical structure and the observed one.

In Turkey and the USA, differences in coping strategies were evaluated as predictors of university adjustment. A cross-cultural study was conducted with 1,143 university students in Turkey and the USA (695 Turkish, 448 US). The results showed that four subscales should be excluded: 'venting', 'self-blame', and acceptance', due to low Cronbach alpha scores, and 'using

instrumental support' was excluded because of the low item-total correlations (Tuna, 2003).

In Spain, the factor structure of a Spanish version was found to be the same as the intended structure of the Brief COPE in that 11 factors represented 11 subscales. The results showed that the items of 'active coping' and 'planning' subscales loaded together, and one item of the 'behavioural disengagement' subscale was poorly loaded, while other one loaded on 'positive reframing'. Therefore, a model of 12 factors was found (Perczek et al., 2000).

In Bosnia and Herzegovina, an evaluation of the factor structure for the original Brief COPE Carver,(1997) was evaluated by Hadziosmanovic (2014). Using two samples from Bosnia (n= 172) and the UK (n=225), Hadziosmanovic (2014) assessed the long-term psycho-social impact of war in Bosnia and Herzegovina. In both samples, the results showed two factors of the structure of the Brief COPE scale. These factors were labelled the 'processing' and 'avoidance' coping strategies. The 'processing' element has 14 items while the 'avoidance' element has 11 items, with Cronbach alpha scores of .87 and .73 respectively in the Bosnia sample, and of 0.70 and 0.80 respectively in the UK sample.

In China, the Chinese version was assessed by Zang, Hunt, and Cox (2013). It had the same number of items as the original Brief COPE (Carver, 1997), namely, 28. The whole scale had a Cronbach's alpha of .66, and the 14 subscales had a Cronbach's alpha of around .70 to .80, ranging from .42 to .91. The final version has two factors, namely, 'active' and 'passive' factors.

In Iraq, the structure of the Arabic version of the Brief COPE was assessed in a sample of 505 university students (199 males, 306 females) in Baghdad (Jaber, 2012). The results showed a structure of four factors. The first factor included reliance on emotional support, reliance on instrumental support, and the 'self-distraction' subscales items, as well as one item from the religion subscale. This factor was labelled 'support-seeking' coping strategies. Termed 'active' coping strategies, the second factor included all items from the 'active coping' and 'planning' subscales in addition to one item from the 'positive reframing' subscale and one from the 'religion' subscale. The third factor was comprised of the full subscales of 'behavioural disengagement' and 'self-blame', and one item from the 'positive reframing' subscale. This was termed 'non-problem focused coping strategies'. Finally, the items from the 'substance use' subscale were loaded on a fourth factor, and this was termed 'substance use' (Jaber, 2012).

In the current study, Jaber's (2012) version of the Brief COPE scale was used. Jaber (2012) validated and assessed the reliability of the Arabic version of the Brief COPE in a sample of traumatised university students in Iraq. Jaber's (2012) version of the Brief COPE scale has 20 items measuring the following four subscales of coping strategies: 'seeking support', 'active coping', 'non-problem focused coping', and 'substance use'. Cronbach alpha scores were .82, .79, .67, and .70 for 'support-seeking coping strategies', 'active coping strategies'; 'non-problem focused coping strategies', and 'substance use' factors respectively. The Likert scale for responses was as follows: 1 = '1

haven't been doing this at all', 2 = 'I've been doing this a little bit', 3 = 'I've been doing this a medium amount' and 4 = 'I've been doing this a lot'. The Brief COPE scale is listed in Table 3.6.

**Table 3.6: Jaber's Brief COPE subscales and their items**

<b>Coping strategies (Subscales)</b>	<b>Items</b>
<b>Active coping</b>	1 I've been concentrating my efforts on doing something about the situation I'm in.
	2 I've been trying to come up with a strategy about what to do.
	3 I've been trying to see it in a different light, to make it seem more positive.
	4 I've been praying or meditating.
	5 I've been taking action to try to make the situation better.
	6 I've been thinking hard about what steps to take.
<b>Non-problem</b>	7 I've been looking for something good in what is happening.
	8 I've been criticizing myself.
	9 I've been blaming myself for things that happened.
	10 I've been giving up the attempt to cope.
	11 I've been giving up trying to deal with it.
<b>Seeking support</b>	12 I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
	13 I've been getting help and advice from other people.
	14 I've been getting comfort and understanding from someone.
	15 I've been trying to find comfort in my religion or spiritual beliefs.
	16 I've been getting emotional support from others.
	17 I've been trying to get advice or help from other people about what to do.
	18 I've been turning to work or other activities to take my mind off things.
<b>Substance use</b>	19 I've been using alcohol or other drugs to help me get through it.
	20 I've been using alcohol or other drugs to make myself feel better.

### 3.4.3 Factor analysis

The 4 factors produced in the study data did not fit the structure advocated by Jaber. A two factor structure incorporating adaptive and maladaptive ways of coping or active and passive coping is more appropriate. The appropriateness of the data for factor analysis was tested by using principal-component factor analysis. The Kaiser-Meyer-Olkin value was .843, exceeding the value of .6 (Kaiser, 1970, 1974), and Bartlett's test of sphericity value was 1.547 which was statistically significant, supporting the factorability of the correlation matrix. These two tests showed that the data were appropriate for factor analysis. A two-factor solution resulted and explained 42% of the variance, which was consistent with the screen plot as shown in Figure 3.1, with a minimum loading of .40. This result is less one item with Jaber's (2012) number of scale items, where the factors reduced from four to two factors only. The number of factors extracted from the factor analysis is theoretically consistent with the concept of coping and also with the results of other factor analysis studies such as (Hadziosmanovic, 2014; Zang et al., 2013).

The first factor included all items from 'active coping', six items from 'seeking support', and only one item from 'non-problem focused coping'. This factor was labelled 'active coping strategies'. The second factor included four items from 'non-problem focused coping', and one item from 'seeking support', and one item from 'substance use', and was named 'passive coping strategies'. One item was removed because the loading was zero; it is therefore not included in the table. The Likert scale for responses was as follows: 1 = 'I

haven't been doing this at all', 2 = 'I've been doing this a little bit', 3 = 'I've been doing this a medium amount' and 4 = 'I've been doing this a lot'. Table 3.7 presents the Brief COPE's subscales and their loadings.

**Table 3.7: Factors of the Brief COPE (BC)**

Items	Subscale	Component	
		1	2
13 - I've been taking action to try to make the situation better.	A1	.771	
14 - I've been thinking hard about what steps to take.	A2	.756	
15 - I've been trying to find comfort in my religion or spiritual beliefs.	A3	.727	
12 - I've been praying or meditating.	A4	.670	
17 - I've been trying to get advice or help from other people about what to do.	A5	.657	
2 - I've been trying to come up with a strategy about what to do.	A6	.648	
4 - I've been looking for something good in what is happening.	A7	.640	
10 - I've been getting help and advice from other people.	A8	.640	
18 - I've been turning to work or other activities to take my mind off things.	A9	.621	
11 - I've been getting comfort and understanding from someone.	A10	.618	
3 - I've been trying to see it in a different light, to make it seem	A11	.605	
16 - I've been getting emotional support from others.	A12	.535	
1 - I've been concentrating my efforts on doing something about the situation I'm in.	A13	.468	
7 - I've been giving up the attempt to cope.	P1		.684
6 - I've been blaming myself for things that happened.	P2		.634
20 - I've been giving up trying to deal with it.	P3		.632
5 - I've been criticizing myself.	P4		.572
9 - I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	P5		.546
8 - I've been using alcohol or other drugs to help me get through it.	P6		.349
BC19-I've been using alcohol or other drugs to make myself feel better.		000	000

**Key:** A = Active; P = Passive.

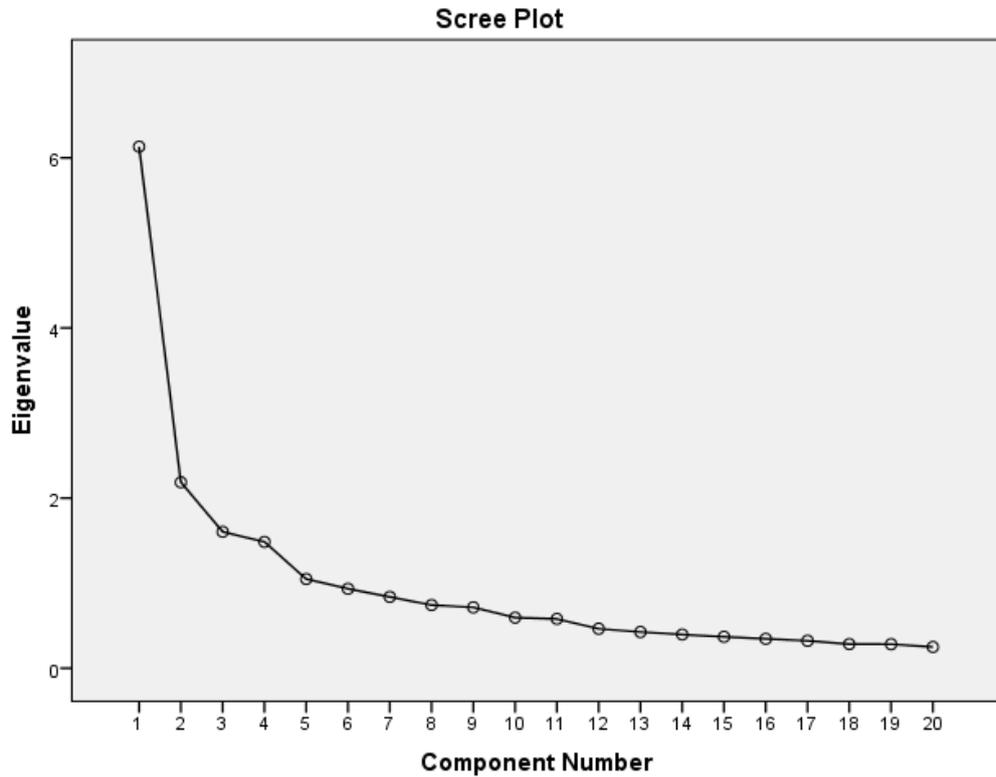


Figure 3.1: Brief COPE Screen Plot

### 3.4.5 Internal consistency

To examine the internal consistency of 19 items of the Brief COPE, Cronbach's alpha was computed, resulting in scores of .88 and .65 for the 'active' and 'passive' side respectively. The lower score for the 'passive coping strategies' might be a consequence of the low cross loading of item number 8, namely, .349, as shown in Table 3.8. This was improved to 0.70 when item 8 was removed (I've been using alcohol or other drugs to help me get through it). There was no score loaded number in item 19 and this might be because alcohol is prohibited in Saudi Arabia. Another reason might be the participants confounded items 8 and 19, attributing them with the same meaning.

Therefore, the decision was made to compute the constructs with item 8 included.

### **3.4.5.1 Item-total correlations for factors**

#### 3.4.5.1.1 Active coping strategies

Correlations among the items themselves were computed, with the items score for 'active coping strategies' subtracted from the factor total. Table 3.8 shows that all correlations were significant at  $p < .01$ .

Table 3.8: Item-total correlations for the factor 'active coping strategies'

Active coping	1	2	3	4	10	11	12	13	14	15	16	17	18
	.487**	.640**	.601**	.645**	.609**	.617**	.599**	.710**	.713**	.664**	.513**	.620**	.593**
1		.514**	.400**	.418**	.200**	.191**	.251**	.246**	.307**	.303**	.149**	.266**	.227**
2			.571**	.583**	.289**	.308**	.300**	.423**	.513**	.342**	.175*	.246**	.418**
3				.623**	.268**	.300**	.252**	.448**	.398**	.351**	.164*	.241**	.366**
4					.317**	.420**	.256**	.454**	.439**	.360**	.173**	.223**	.453**
10						.625**	.404**	.405**	.410**	.380**	.325**	.508**	.350**
11							.257**	.408**	.417**	.332**	.403**	.491**	.363**
12								.550**	.484**	.566**	.329**	.388**	.421**
13									.620**	.592**	.377**	.432**	.357**
14										.528**	.384**	.478**	.346**
15											.330**	.477**	.397**
16												.548	.353**
17													.276**
18													

\* $p < .05$ ; \*\* $p < .01$

## 3.4.5.1.2 Passive coping strategies

Correlations among the items themselves were computed, with the items score for 'passive coping strategies' subtracted from the factor total. These were at the  $p < .01$  significance level, as shown in Table 3.9. In contrast, the correlations between item 8 and 'passive coping strategies' subtracted was not significant; and with the other items was negative or low, such as items number 5, 6, and 7.

**Table 3.9: Item-total correlations for the factor 'passive coping strategies'**

Passive coping	5	6	7	8	9	20
	.447**	.520**	.472**	.051	.411**	.422**
5		.571**	.306**	-.052	.251**	.182**
6			.301**	-.038	.340**	.251**
7				.057	.340**	.379**
8					-.073	.188**
9						.328**
20						

\* $p < .05$ ; \*\* $p < .01$

The Cronbach alpha scores and inter-correlations for the items of the Brief COPE showed that the scale was internally consistent. We can conclude that the new Arabic version of Brief COPE scale is a valid and reliable instrument for measuring coping strategies among the population of Saudi firefighters (see Appendix C for the final version).

### 3.4.6 Test-retest reliability of the Brief COPE

The test-retest reliability of the Brief COPE scale was established by re-administering the scale to a sample of 22 firefighters who were selected

randomly from the original sample (n=200), after two weeks. The correlation coefficient between the test and re-test was .76 for the 'active coping' factor, and .72 for 'passive coping' factor, indicating that the Brief COPE scale is internally consistent.

### ***3.5 Discussion***

In this chapter, two self-report scales were developed and validated in order to achieve the aims of this study. These were the Firefighters Trauma History Screen (FTHS) and the Brief COPE scale. The Firefighter Trauma History Screen (FTHS) was comprised of 15 items. Fourteen items were assessing the experience of 14 traumatic events resulting in PTSD, and one item enquired about other stressful incidents not captured by the other 14 items. These events generally pertained to the following traumas: firefighter work and violence-related events; transportation accidents; death of close family or friends; witnessing someone die; natural disasters; and sexual assault. The FTHS was based on criteria A1 and A2 of DSM-IV. Firefighters typically experience events which individuals in the general population do not experience. Thus, it was necessary to develop a checklist that was appropriate for assessing traumatic events among firefighters in Saudi Arabia.

With regard to the Brief COPE scale, the factor structure of the original scale (Carver, 1997) had 28 items in 14 subscales. In the present study, Jaber's (2012) version of the Brief COPE scale was used because it was the Arabic version has only been found. It has 20 items in four subscales including:

'seeking support', 'active coping', 'non-problem focused coping', and 'substance use'. Across the data sets, the new Arabic version has 19 items in two factors. The 'active coping' factor is comprised of 13 items. It was clear that some referred to more active forms of coping while others referred more to passive mechanisms of coping.

The low correlation between some items in the 'passive coping' factor, such as item number 8 'I've been using alcohol or other drugs to help me get through it' and item numbers 5, 6, and 7, has not affected the item-total correlation. Nevertheless, there was a low cross loading of item number 8 (.349). However, as this item is important for measuring the alcohol and drug use, it has not been removed.

Based on a work of a trauma research group at Nottingham University, UK, which has focused on the factor structure of the Brief COPE across different cultural contexts, the results were consistent with those of Hadziosmanovic (2014). The results showed two factors of the structure of the Brief COPE scale, the 'processing' and 'avoidance' coping strategies factors. Similarly, the results of Zang et al. (2013) also presented two factors for China's Brief COPE version, namely, 'active' and 'passive' coping strategies. Future research should be conducted regarding the brief COPE in Saudi culture.

### ***3.6 Conclusion***

The outcome of the FTSH and the Brief COPE factor analyses, as well as the discussions associated with the structures produced, pointed to the need to conduct more research and validation of more scales across different cultural contexts. This can help researchers to obtain a deeper insight into the problems faced by firefighters and other individuals who work in stressful environments and need to find strategies for coping with such environments. The following chapters focus on both quantitative and qualitative approaches in order to provide a comprehensive and coherent picture of the problems confronting Saudi firefighters.

## **Chapter 4: The prevalence rate of trauma and related symptoms and risk factors**

### ***4.1 Introduction***

This chapter presents the first study of this research programme focusing on the extent and impact of PTSD symptoms, as well as depression and anxiety, among Saudi firefighters. A cross-sectional survey was conducted for several reasons. First, to show the extent to which traumatic incidents and trauma-related symptoms are present among Saudi firefighters. Second, to identify factors affecting the prevalence of PTSD symptoms such as coping strategies and social support. In line with the aims of this study, this chapter contains a study of the prevalence rate of traumatic events, PTSD symptoms, depression and anxiety symptoms, as well as coping strategies, and social support. These variables are examined in terms of marital status, age group, years of services, and level of education. The variables that predict PTSD are also investigated.

Data were collected using five existing self-report scales designed to measure trauma history, post-traumatic stress symptoms, depression, anxiety, coping strategies and social support. The Arabic versions were all validated and used in Arabic studies. The validation of these measures was presented in Chapter3.

The following research questions are addressed in this chapter:

1. What types of traumatic events do Saudi firefighters experience?

2. What is the prevalence rate of PTSD symptoms among Saudi firefighters?
3. What are the risk factors for psychological distress?
4. What variables predict the severity of PTSD in Saudi firefighters?

## ***4.2 Method***

### **4.2.1 Participants**

Two hundred male Saudi firefighters, whose characteristics were described in Chapter 2, were recruited for this study. They were selected randomly from the west region (Makkah Province) of Saudi Arabia following the three stages: 1) select four firefighter centers from each city (Makkah, Jeddah, Taif), 2) select one fire station (unit) from each center, 3) all firefighters in the fire station (unit) were asked to participate. The first two stages were via a simple random way. Numbers were assigned to the centers and fire stations. Then, the numbers were selected from a box. The data were collected in August 2012. Information sheets and consent forms were distributed to the potential participants (see Appendix B). The purpose and explicit information about why their participation of the study was being requested were explained. Two hundred and nineteen agreed to participate by signing the consent form. Two hundred questionnaires included and analysed, while 19 excluded as a result of missing value or non-returned.

The socio-demographic characteristics of the participants are summarised in Chapter 3 (Table 3.5, *p* 122). The age range of the sample was 19 to 50 years

(mean =  $31.52 \pm 6.75$ ). Years of service ranged from 1 to 29 years (mean  $10.75 \pm 6.5$ ). All participants had experienced traumatic events, and the majority of them were married and had a high-school level of education.

#### **4.2.2 Measures**

The psychometric details of the scales were presented in Chapter 2 (p. 88), and Chapter 3. The questionnaire included several sections. The first section focused on demographic characteristics including age and marital status. The second section focused on socioeconomic status including years of service and level of education. In Section Three, exposure to traumatic events was assessed in terms of whether the event befell themselves or their family members or friends, with accompanying feelings of horror, fear or helplessness. Section Four assessed psychological well-being using the Screen for Post-traumatic Stress Symptoms (SPTSS), and The Hospital Anxiety and Depression Scale (HADS). In section five, psychological resources were assessed using the Brief COPE, and Social Support scales (See Chapter 2 and 3 for full details).

The DSM-IV criteria for PTSD have been used in the current study because DSM-5 was not available at the time of this study. Accordingly, exposure to a traumatic event with accompanying feelings of horror, fear or helplessness is the first criterion of a PTSD diagnosis (Criterion A). Traumatic events were assessed by using the Firefighters Trauma History Screen (FTHS) (see Chapter 3 for full details). The FTHS was developed and used to measure the types of traumatic events to which firefighters in Saudi Arabia are typically exposed.

This is a brief, 15-item self-report measure. The 15 items include natural disasters, civil defence trauma, sexual assault, and general incidents. For each event, participants are asked to indicate whether the event befell themselves or their family members or friends (“yes” or “no”) and the frequency with which they have experienced the incident. For each event, additional dimensions are assessed, including whether there was a threat of injury or death, and feelings when the event occurred, such as fear, horror, or helplessness according to criterion A2 of the DSM-IV.

### **4.2.3 Procedure**

The questionnaire was orally administered face-to-face by the researcher, who is a native Arabic speaker. Participants were informed that all scale items were focused on traumatic events to ensure that the latent psychological variables were associated with exposure to traumatic events. The researcher introduced the questionnaires orally to the participants who then completed these questionnaires on paper. The duration of this oral administration of the questionnaires ranged from 15 to 20 minutes for each group of the participants.

### **4.2.4 Data analysis**

To examine the significance of differences according marital status, age, years of service, and level of education and within subjects, three types of statistical tests were used: Chi-Square, t-test, and ANOVA. Stepwise multiple linear regression analyses were conducted to identify the predictor variables for PTSD symptoms.

## 4.3 Results

### 4.3.1 The most frequent and distressful events

The most frequent and distressful incidents were assessed. Table 4.2 shows the number of firefighters exposed to each event, the number who felt distressed, and the frequency of the incident.

**Table 4.2: Number of firefighters exposed to each event, reported feelings of distress, and frequency of the incident (n=200).**

Events	Exposed N (%*)	Distressed N (%**)	Mean number of exposures
During service in the civil defence sector – seeing very violent events.	140 (73)	95 (47.5)	2.08
Transportation accident (e.g., car, boat, train, bicycle, motorbike).	113 (56.5)	82 (41)	1.36
Sudden death of close family or friend.	103 (51.5)	81 (40.5)	0.97
Serious accident at work, home, or during recreational activity.	74 (37)	47 (23.5)	0.92
Seeing someone die suddenly or get badly hurt or killed.	69 (34.5)	54 (27)	1.55
Natural disaster (e.g., flood, earthquake).	61 (30.5)	35 (17.5)	0.65
Suddenly abandoned by a dear friend or a family member or wife.	47 (23.5)	29 (14.5)	0.42
Any other very stressful event or experience.	40 (20)	29 (14.5)	0.51
Exposed to serious injury at work.	31 (15.5)	22 (11)	0.53
Exposed to a toxic substance (for example, dangerous chemicals, radiation).	30 (15)	23 (11.5)	0.45
Hit or kicked hard enough to injure as a child or an adult.	27 (13.5)	18 (9)	0.50
Loss of a home or possessions suddenly as a result of a natural or economic disaster.	24 (12)	19 (9.5)	0.35
Attacked with a gun, knife, or weapon.	22 (11)	16 (8)	0.36
Life-threatening illness.	17 (8.5)	13 (6.5)	0.44
Assault or attempted sexual assault.	10 (5.0)	2 (1)	1.15

**Note:** Exposed = number of firefighters who experienced each event; Distressed = number of firefighters who have reported feeling distressed after experiencing the event. \* = number exposed /200; \*\* = number distressed/number exposed.

The results show that most firefighters experienced incidents such as seeing very violent events during service in the civil defence sector (73%), transportation accidents (56.5%), and sudden death of close family or a friend (51.5%). Approximately one-third of the participants reported experiencing four or more events. For instance, serious accidents at work, home, or during recreational activity; seeing someone die suddenly or get badly hurt or killed; natural disaster; suddenly abandoned by a dear friend or a family member or wife. Ten percent to 20% of firefighters reported having been exposed to other events, for example: serious injury at work; a toxic substance; hit or kicked hard enough to injure as a child or an adult; sudden loss of a home or possessions as a result of a natural or economic disaster; attacked with a gun, knife, or weapon. Fewer than 10% of the participants reported events such as life-threatening illness, and assault or attempted sexual assault.

With regard to distressing events, between 1% and 47.5% of participants reported intense feelings of distress when exposed to the incidents. Of the most frequently experienced events, the most distressing incidents were seeing very violent events during service in the civil defence sector (47.5%) and transportation accidents (41%).

Participants experienced most of the incidents more than once. The mean frequency of events ranged from 0.35 to 2.08 times, and the most frequent event was seeing very violent events during service in the civil defence sector.

To fit criterion A2 of the DSM-IV, firefighters were asked to report the feelings that they experienced towards the traumatic events, such as fear, horror or

helplessness. Overall, 169 of 200 (84.5%) reported experiencing traumatic events with intense fear, horror or helplessness, regarding at least one event that met criterion A of the DSM-IV, whether that event befell themselves or their family members or friends. Accordingly, the responses of 31 (15.5%) firefighters who did not meet criterion A of the DSM-IV were excluded, and 169 participants were included in subsequent analyses.

### **4.3.2 Type of exposure**

The differences in number of traumatic events which were experienced by the firefighters themselves and their family members or friends were examined using Chi-Square tests. As shown in Table 4.3, only 6% of married firefighters reported no personally experienced events. Thirty-eight percent of married firefighters reported experiencing 1 to 5 events, which is almost the same as single firefighters of whom 36% reported experiencing 1 to 5 events. On the other hand, the majority of married firefighters (56%) and half of single firefighters (51%) reported that they had experienced 6 or more events. These differences were not significant.

With regard to the number of events experienced by the firefighters' family members or friends, the results shows that 27% of married firefighters and 16% of single firefighters did not report any traumatic events experienced by a family member or friend. In contrast, 31% of married firefighters and 47% of single firefighters reported others experiencing 1 to 5 events, and 42% of married firefighters and 37% of single firefighters reported others

experiencing 6 or more events, although these differences, though approaching significant, were not significant.

**Table 4.3: Number of traumatic events experienced by participants or their family members or friends (n=169)**

		Number of traumatic events experienced			$\chi^2$	<i>p</i>
		0 N (%)	1-5 N (%)	6 or more N (%)		
Self- exposure	Single	5 (12)	16 (37)	22 (51)	<b>1.36</b>	<b>0.50</b>
	Married	10 (6)	60 (38)	87 (56)		
Other- exposure	Single	7 (16)	20 (47)	16 (37)	<b>4.27</b>	<b>0.11</b>
	Married	42 (27)	48 (31)	12 (42)		

### 4.3.3 PTSD and the Hospital Anxiety and Depression Scale (HADS)

In terms of the PTSD criteria in the DSM-IV, The mean scores on the SPTSS and HADS scales were moderately high. 169 of the 200 participants (84.5%) reported experiencing traumatic events with intense fear, horror or helplessness which fit criterion A of the DSM-IV. Of these, 57% (96/169) fully met the DSM-IV criteria for PTSD; 39% (66/169) partially met the PTSD criteria and only 4% participants have not met the PTSD criteria Table 4.4. The prevalence of anxiety and depression were 44.4% (75 of 169 participants) and 53.3% (90 of 169) respectively, with a cut-off point of 8 in anxiety and 6 in depression were suggested by HADS Arabic version validation (El-Rufaie. & Absood, 1995).

**Table 4.4: Prevalence of PTSD symptoms, and depression and anxiety among the participants (n=169)**

<b>Participants with PTSD</b>	<b>N</b>	<b>%</b>
Fully	96	57
Partially	66	39
Non	7	4
Total	169	
<b>Participants with Anxiety</b>	<b>N</b>	<b>%</b>
Yes	75	44.4
No	94	55.6
Total	169	
<b>Participants with Depression</b>	<b>N</b>	<b>%</b>
Yes	90	53.3
No	79	46.7
Total	169	

To examine to what extent participants who report PTSD report depression and anxiety as well, Chi-square was used to test the significance of differences in reporting fully PTSD and depression and anxiety symptoms. The results are displayed in Table 4.5.

**Table 4.5: Differences between PTSD Groups in Depression and Anxiety Categories**

	<b>PTSD Fully met DSM-IV</b>	<b>NO</b>	<b>Yes</b>	$\chi^2$
		<b>N (%)</b>	<b>N (%)</b>	
<b>Anxiety</b>	Fully	34 (35.4)	62 (64.6)	36.75***
	Partially/ Non	60 (82.2)	13 (17.8)	
<b>Depression</b>	Fully	25 (34.2)	65 (67.7)	18.65***
	Partially/ Non	48 (65.8)	31 (32.3)	

\*\*\* $p < .001$

The table shows that most of the participants who reported partially or non PTSD reported a normal level of depression and anxiety symptoms. In contrast, a minority of participants who reported PTSD that fully met DSM-IV criteria also reported depression and anxiety symptoms that could be probable clinical case and need further assessment of both depression and

anxiety. This reflects a significant link and comorbidity between PTSD and depression and anxiety. The differences in depression and anxiety symptoms between participants whose PTSD fully and partially or did not meet PTSD were significant.

Table 4.6 below presents the mean and standard deviation of the scores for the coping strategies and social support variables of this study because there were not cut-off points of these scales. Then, the mean score and SDs were considered.

#### 4.3.4.1 Descriptive analysis of coping strategies, and social support

**Table 4.6: Mean and standard deviation of measures**

Measures		Range	Mean	SD
<b>Coping</b>	Active	0-36	35.85	7.98
	Passive	0-14	11.90	3.24
<b>Social Support</b>	R Family	0-34	22.62	9.82
	R Friends	0-33	15.05	9.49
	R GO-NGO	0-30	3.68	6.11
	S Family	0-6	4.5	2.13
	S Friends	0-6	2.95	2.24
	S GO-NGO	0-6	.65	1.35
<b>Total</b>		0-99	49.49	23.28

**Note:** R = received; S=Satisfaction; GO-NGO = Government and Non-Government Organisations.

In terms of coping strategies, the mean score for ‘active coping strategies’ subscale was more than that for ‘passive coping strategies’, that is,  $M=35.85$  ( $SD=7.89$ ) and  $M=11.90$  ( $SD= 3.24$ ) respectively. With regard to social support, ‘received social support from family’ was more than ‘received social support from friends’, that is,  $M=22.62$  ( $SD=9.82$ ) and  $M=15.05$  ( $SD= 9.49$ ) respectively. This might be because the majority of participants are married.

Interestingly, satisfaction with the support indicated that participants did not report the support perceived from the three sources of support.

The differences in PTSD between marital status and level of education were also examined and are presented in Table 4.7 and 4.8 below.

#### **4.3.5 Risk factors**

Independent samples t-tests and one-way analyses of variance (ANOVA) were used to examine the differences on scale scores among sub-groups. The results for marital status are presented in Table 4.7 below.

### 4.3.5.1 Marital status and psychological symptoms

Table 4.7: T-test results by marital status

Measures		Group	Mean	SD	df	t	p
<b>PTSD</b>	Avoidance	Single	7.94	6.57	167	2.29	.026*
		Married	5.16	5.07			
	Arousal	Single	5.91	3.49	167	2.11	.036*
		Married	4.17	4.44			
	Re-experience	Single	5.02	4.11	167	2.16	.032*
		Married	3.28	4.23			
<b>Total</b>		Single	18.88	12.84	167	2.64	.009**
		Married	12.62	12.29			
<b>HADS</b>	Anxiety	Single	7.58	3.93	167	.74	.45
		Married	7.04	3.79			
	Depression	Single	7.11	3.47	167	-.72	.47
		Married	7.59	3.39			
<b>Coping</b>	Active	Single	36.14	6.99	167	.24	.81
		Married	35.77	8.23			
	Passive	Single	13.02	3.37	167	2.29	.023*
		Married	11.62	3.15			
<b>Social Support</b>	R Family	Single	22.79	9.49	167	.11	.91
		Married	22.58	9.93			
	R Friends	Single	14.58	8.48	167	-.31	.75
		Married	15.17	9.76			
	R GO-NGO	Single	4.67	6.69	167	1.05	.29
		Married	3.43	5.96			
	S Family	Single	4.52	2.14	167	.04	.96
		Married	4.51	2.14			
	S Friends	Single	2.91	2.06	167	-.13	.89
		Married	2.97	2.29			
	S GO-NGO	Single	.91	1.46	167	.06	.21
		Married	.58	1.32			

**Note:** R = received; S = Satisfaction; GO-NGO = government and non-government organisations. Single (n=34), Married (n=135) \*p<0.05; \*\*p<0.01

Single participants reported significantly higher PTSD scores than did married participants ( $p<0.01$ ), whereas single participants reported significantly lower scores on avoidance, arousal and re-experience which ( $p<0.05$ ). There was also a significant difference in 'passive coping strategies' between single and married participants ( $p<0.05$ ), with single participants reporting higher scores on this measure than did married participants. This mean single participant used worse coping 'passive coping strategies' than married. In contrast, no

significant differences were found between single or married participants on the other variables.

#### 4.3.5. Education and psychological symptoms

**Table 4.8: ANOVA results by education**

Measures		Group	Mean	SD	df	f	p	Post hoc
<b>PTSD</b>	Avoidance	Primary	4.85	4.24	2,166	.75	.47	-
		Secondary	5.59	5.45				
		Tertiary	6.61	6.24				
	Arousal	Primary	3.70	4.40	2,166	.80	.44	-
		Secondary	4.46	4.14				
		Tertiary	5.19	4.79				
	Re-experience	Primary	2.90	4.08	2,166	5.05	.007**	2/3**
		Secondary	3.14	3.69				
		Tertiary	5.58	5.41				
<b>Total</b>		Primary	11.45	11.39	2,166	1.97	.14	-
		Secondary	13.19	11.62				
		Tertiary	17.38	15.34				
<b>HADS</b>	Anxiety	Primary	8.50	3.22	2,166	2.10	.12	-
		Secondary	7.17	3.95				
		Tertiary	6.33	3.52				
	Depression	Primary	9.15	2.64	2,166	4.14	.018*	1/3*
		Secondary	7.53	3.50				
		Tertiary	6.47	3.13				
<b>Coping</b>	Active	Primary	35.25	5.98	2,166	2.34	.09	-
		Secondary	35.15	8.74				
		Tertiary	38.38	5.79				
	Passive	Primary	10.65	3.40	2,166	1.72	.18	-
		Secondary	12.06	3.35				
		Tertiary	12.11	2.65				
<b>Social Support</b>	R Family	Primary	21.05	12.25	2,166	.71	.49	-
		Secondary	23.25	8.91				
		Tertiary	21.52	11.10				
	R Friends	Primary	11.90	10.08	2,166	1.77	.17	-
		Secondary	15.92	9.18				
		Tertiary	14.08	9.94				
	R GO-NGO	Primary	1.85	3.52	2,166	1.11	.33	-
		Secondary	3.81	6.16				
		Tertiary	4.30	6.98				
	S Family	Primary	3.70	2.69	2,166	2.65	.073	-
		Secondary	4.76	1.91				
		Tertiary	4.19	2.36				
	S Friends	Primary	2.15	2.27	2,166	1.50	.22	-
		Secondary	3.08	2.26				
		Tertiary	3.00	2.12				
S GO-NGO	Primary	.30	.92	2,166	.79	.45	-	
	Secondary	.71	1.47					
	Tertiary	.63	1.15					

**Note:** R = received; S = Satisfaction; GO-NGO = Government and Non-Government Organisations. 1=Primary school (n=20); 2= Secondary school (n=113); 3 = Tertiary education (n=36). \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 4.8 shows that there were significant group differences in the re-experience of symptoms and depression in terms of education level. Post hoc comparisons indicate that participants with tertiary education scored higher in terms of re-experiencing symptoms than other groups, whereas participants with at least a secondary level of education scored higher on depression disorders than did the other two groups. No significant differences were found between the different education levels and PTSD symptoms, avoidance, arousal, anxiety, coping strategies, and social support.

#### **4.3.5.3 Independent predictors of PTSD**

The first step in developing an intervention programme for PTSD is identifying those variables that predict PTSD. To find out the best combinations of variables for predicting PTSD, a stepwise multiple regression was carried out with total PTSD score as the dependent variable, and the following as independent variables: all subscales of the Firefighters Trauma History Screen (FTHS), HADS, Brief COPE, and Social Support scale, as well as age, years of service, education level, and marital status. Variables of satisfaction with social support received from the three sources – family, friends, and government and non-government organisations (GO-NGO) – were excluded owing to high correlations with variables. The data of 169 participants who met the criteria for DSM-IV PTSD symptoms were entered into a stepwise multiple regression analysis, with 31 participants excluded because they did not meet the PTSD DSM-IV criteria.

The following independent variables were entered into the equation: 1) Traumatic Events experienced by participants themselves (TE-P); 2) Traumatic Events experienced by participants' family members or friends (TE-C); 3) Anxiety (HADS); 4) Depression (HADS); 5) Active coping strategies; 6) Passive coping strategies; 7) Social support received from family (SS Family); 8) Social support received from friends (SS Friends); 9) Social support received from government and non-government organisations (GO-NGO); 10) Years of service; 11) Education level; 12) Marital status. Because years of service was highly correlated with age ( $r = .95$ ), years of service was used instead of age to reduce the number of predictors and potential multicollinearity. Table 4.9 presents the correlation coefficients of the variables entered into the equation.

Anxiety, depression and passive coping are the only variables correlated positively with the total PTSD score. Anxiety variables correlated positively with depression, 'passive coping strategies', and negatively with education level. Turning to depression, this variable correlated positively with the age and negatively with 'active coping strategies', social support from family, and education level. With regard to traumatic events variables, traumatic events experienced by participants themselves (TE-P) correlated negatively with traumatic events experienced by participants, family members or friends (TE-C), social support from friends and years of service while traumatic events experienced by participants, family members or friends (TE-C) correlated positively with 'active coping strategies'. In terms of coping strategies, 'active

‘coping’ correlated with ‘passive coping’ and both the social support of friends and the social support of family. In contrast, ‘passive coping’ strategies correlated positively with social support from friends and negatively with age, years of service, and marital status. Social support from friends correlated positively with family social support variable. Age correlated positively with years of service and marital status, and negatively with education level. On the other hand, years of service correlated positively with marital status and negatively with level of education. The positive correlation between active coping strategies and other variables that mean they have better coping strategies whereas positive correlation between passive coping strategies and other variables that mean they have worse coping strategies.

Table 4.9: Correlation coefficients of factors entered into the stepwise multiple regressions

	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>PTSD</b>	.573**	.412**	.091	.048	-.009	.358**	-.090	.096	.011	-.007	.001	-.033	-.094
<b>Predictor variables</b>													
<b>1-Anxiety</b>		.545**	.034	.078	-.143	.285**	-.046	.050	.060	.030	.019	-.169*	-.046
<b>2-Depression</b>			.132	-.074	-.328**	.140	-.227**	-.111	-.013	.157*	.129	-.219**	.074
<b>3-TE-P</b>				-.310**	-.100	-.016	-.101	-.165*	.018	.037	-.310**	-.027	.051
<b>4-TE-C</b>					.157*	.143	.090	.128	-.072	-.007	.019	.064	-.056
<b>5-Active Cope</b>						.243**	.365**	.239**	.085	.035	.035	.140	.010
<b>6-Passive Cope</b>							.128	.230**	.072	-.166*	-.158*	.137	-.168*
<b>7-SSR Family</b>								.560**	.148	.003	.015	-.016	.007
<b>8-SSR Friends</b>									.316**	-.065	-.075	.026	.018
<b>9-SSR GO-NGO</b>										-.062	-.060	.083	-.115
<b>10-Age</b>											.953**	-.363**	.447**
<b>11-Years of service</b>												-.378**	.455**
<b>12-Education level</b>													-.148
<b>13-Marital Status</b>													

\* $p < .05$ ; \*\* $p < .01$

A model of three variables was produced which included anxiety, depression, and ‘passive coping’ strategies. This combination of variables significantly predicted PTSD. The beta weights are shown in Table 4.10. Overall, these variables explained 37.7 % of PTSD variance (adjusted  $R^2 = .373$ ).

**Table 4.10: Multiple regression analysis: Summary of variables predicting PTSD.**

Variables	B	SE	$\beta$
1-Anxiety	1.41	.24	.43**
2- Passive cope	.82	.24	.21**
3- Depression	.53	.26	.14*
Constant	8.09	3.17	

Note:  $R^2 = .384$ ; adjusted  $R^2 = .373$ ;  $F = 4.035$ ,  $p < .01$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

There has been a criticism about the diagnosis of PTSD symptoms overlapping with anxiety and depression which was argued by Brewin et al. (2009) and found in a recent study by Zhang et al. (2013). In addition, anxiety and depression with passive coping strategies variables explained 37.7 % of PTSD variance in this study. Therefore, multiple regression analysis of PTSD without anxiety and depression was conducted as a consequence of the overlapping between PTSD, anxiety, and depression symptoms.

**Table 4.11: Multiple regression analysis: Summary of variables predicting PTSD without depression and anxiety.**

Variables	B	SE	$\beta$
1- Passive cope	1.37	.27	.35***
Constant	.547	3.42	

Note:  $R^2 = .128$ ; adjusted  $R^2 = .123$ ;  $F = 24.494$ , \*\*\* $p < .001$

Only one variable was produced in Table 4.11 above which ‘passive coping’ strategies. This variable significantly predicted PTSD and explained 12.3% of PTSD variance (adjusted  $R^2 = .123$ ).

Multiple regression analysis of anxiety and depression was conducted separately in order to find more predicting variables and build clear model of trauma among for Saudi firefighters.

**Table 4.12: Multiple regression analysis: Summary of variables predicting Anxiety.**

Variables	B	SE	$\beta$
1-Passive cope	.43	.08	.36**
2-Active cope	-.10	.03	-.22*
3- Low level of education	2.06	.84	.17*
Constant	5.68	1.46	

**Note:**  $R^2=.159$ ; adjusted  $R^2= .144$ ;  $F=5.906$ , \* $p <.05$ ; \*\* $p<.01$

Three variables was produced in Table 4.12 above which included ‘passive coping’ strategies, ‘active coping’ strategies and low level of education. This combination of variables significantly predicted anxiety. The beta weights are shown in Table 4.12 and these variables explained 14.4 % of anxiety variance (adjusted  $R^2= .144$ ).

**Table 4.13: Multiple regression analysis: Summary of variables predicting Depression.**

Variables	B	SE	$\beta$
1- Active cope	-.17	.03	-.40***
2- Passive cope	.28	.07	.26***
3- Years of service	.09	.03	.18*
Constant	9.25	1.34	

**Note:**  $R^2=.193$ ; adjusted  $R^2= .178$ ;  $F=9.35$ , \* $p <.05$ ; \*\* $p<.01$

Three variables was produced in Table 4.13 above which included ‘active coping’ strategies, ‘passive coping’ strategies and years of service variables. This combination of variables significantly predicted depression. The beta weights are shown in Table 4.13 and these variables explained 17.8 % of PTSD variance (adjusted  $R^2= .178$ ).

### ***4.6 Discussion***

The results show that the majority of participants (84.5%) experienced at least one traumatic event with feelings of intense fear, horror or helplessness. The most frequently reported events were: seeing very violent events – during service in the civil defence sector; car accidents; and the sudden death of close family or a friend. Slightly less frequently reported events, reported by approximately one-third of the participants, included: a serious accident at work, home, or during recreational activity; and seeing someone die suddenly or get badly hurt or killed.

With regard to the number of personally experienced events, the majority of both married and single participants reported that they had experienced more than one traumatic event. Most participants met criterion A1 for PTSD in the DSM-IV, meaning that they reported some symptoms of PTSD. No significant differences were found between single and married participants in terms of the number of personally experienced events.

In terms of PTSD symptoms, more than half of the participants or 57% (n=96) reported fully meeting the PTSD criteria; 39% (66/169) partially met the PTSD criteria and only 4% participants have not met the PTSD criteria. The prevalence rate of PTSD symptoms is higher than that of the previous studies, which range from 6.5% (Haslam & Mallon, 2003) to 37% (Bryant. & Harvey., 1995). The relatively high rate of PTSD symptoms in the present study may be associated with other factors such as social support perceived, years of

service, no psychological trauma care and the lack of outlets for them to talk about their experiences.

In terms of anxiety and depression, 44.4% of participants reported anxiety, while 53.3% reported depression. Most participants who PTSD fully met DSM-VI criteria also reported anxiety and depression probably clinical case.

It was found that PTSD symptoms are significantly associated with anxiety, depression and passive coping strategies. This finding of anxiety and depression is consistent with previous studies (Higgitt, 2006; Markus Heinrichs et al., 2005). The diagnostic criteria that these studies used for psychological disorders can play a significant role in the association between PTSD symptoms and comorbidity such as depression and anxiety. Thus, the high rates of these disorders might be a simply an epiphenomenon (Brady, Killeen, Brewerton, & Lucerini, 2000; Keane & Kaloupek, 1997). Conditions that may be comorbid with PTSD, presenting before the trauma occurred, and which may constitute a risk factor for PTSD, include major depression (Andrykowski & Cordova, 1998; Brady. et al., 2000). In terms of coping strategies, single firefighters with PTSD used passive coping strategies more than married firefighters were found in this study. This finding consisted with previous studies investigated the association between PTSD symptoms and coping strategies such as the Brown, Mulhern, & Joseph (2002) study.

The socio-demographic variables that were found to be risk factors for PTSD or other comorbid symptoms included education level and marital status.

Being single (unmarried) is a significant risk factor for PTSD and their clusters

(avoidance, arousal, and re-experience) in Saudi Firefighters. This might be because single firefighters have less opportunity for emotional support from family while married firefighters have a greater likelihood of this form of support. In terms of level of education, a high level of education in the current study was a significant risk factor for re-experiencing a cluster of PTSD symptoms, while a low level of education was a significant risk factor for depression disorder. This finding about a low education level was consistent with the previous studies (Brewin et al., 2000; Zang, 2013) while another study highlighted the importance of marital status (Zang, 2013).

In terms of predictors of PTSD in the current study, the three main variables were found to be: anxiety, having depression and 'passive coping' strategies. The most powerful predictors of PTSD, these explain 37.3% of the variance of PTSD symptoms. Anxiety predicted PTSD symptoms because individuals with PTSD were more likely to experience anxiety over daily environmental concerns and also more likely to have had a direct involvement in the stressful work. Furthermore, studies have found that low levels of education can be a risk factor for PTSD symptoms (Chamberlin, 2010; Fullerton et al., 2004; Zang, 2013). The result highlighted that firefighters with low level of education in stressful environment work were likely to develop PTSD and using active cope strategies in order to cope with the situation.

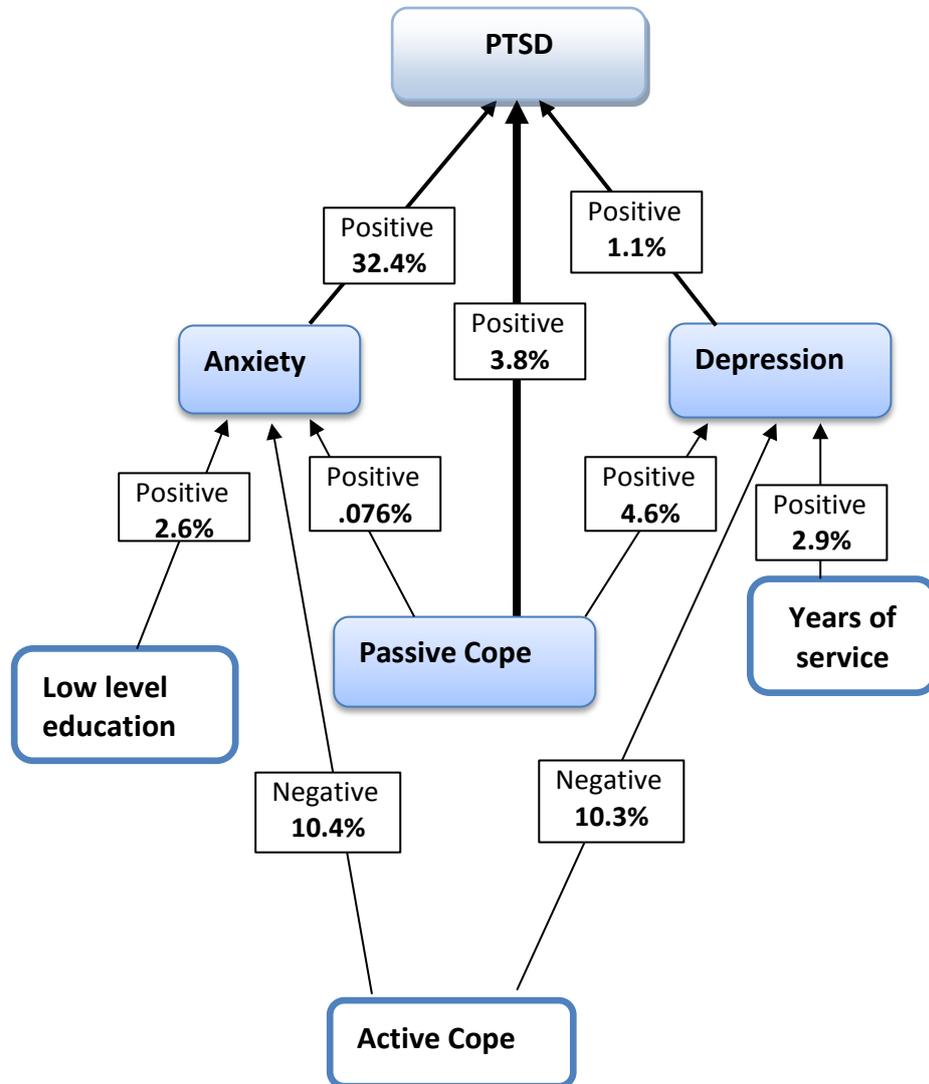
Depression is another variable which predicted PTSD symptom in this study and this consistent with previous studies (Breslau, Davis, Andreski, & Peterson, 1991; McFarlane & Papay, 1992; Shalev et al., 1998). In addition,

years of experience was found to be a risk factor to develop depression symptoms and then likely to increase the PTSD symptoms among firefighters. This finding is consistent with previous studies which found years of service predicted depression and PTSD symptom (Corneil et al., 1999; Meyer et al., 2012; Murphy et al., 1994).

Coping strategies is another variable which was found to be predictive of PTSD, depression and anxiety symptoms among firefighters. This finding supports previous studies in different countries who found similar results in Canadian (Regehr, Hill, Knott, & Sault, 2003b) in the UK (Haslam & Mallon, 2003), and Australian firefighters (Chamberlin, 2010; Dean, Gow, & Shakespeare-Finch, 2003).

### ***4.7 Building a model of trauma***

The study helps develop model for the prediction of PTSD symptoms and anxiety and depression. The outcome result shows that PTSD symptoms can be predicted by the following variables: anxiety, depression and passive coping' strategies. These variables explained 37.3 % of the variance of PTSD symptoms. In terms of anxiety, three variables predicted anxiety which included 'passive coping' strategies, 'active coping' strategies and low level of education. Depression variables can be predicted by 'active coping' strategies, 'passive coping' strategies and age of service variables. Figure 4.1 below presents the association between variables and PTSD symptoms with the aim of developing a comprehensive model of the factors that predict trauma for Saudi firefighters.



**Note:**

- Depression, anxiety and passive cope were predictor variables in PTSD (37.7%).
- Active, passive cope and years of service were predictor variables in Depression when PTSD and anxiety removed (17.8%).
- Active, passive cope and level of education were predictor variables in anxiety only when PTSD and Depression removed (14.4%).

**Figure 4.1: The prediction model of PTSD**

Figure 4.1 presents three main variables which can be used to predict PTSD symptoms in Saudi firefighters. Firefighters who are anxious and have a low level of education with passive coping are more likely to develop PTSD symptoms and less likely to use active cope. In addition, firefighters who are depressed likely to use more passive cope and less active cope in different years of service and this can increase the probability of developing PTSD symptoms. Traumatized firefighters are more likely to use passive coping strategies than active cope. Social support did not have a significant impact on the prediction of PTSD symptoms and /or anxiety and depression.

### ***4.8 Limitation***

Even though the current study provides interesting results, there are limitations. There was a confound between traumatic events associated with firefighter's job and personal events as well as previous event due to the FTMS measure used. The measure screened the event without distinction between the traumatic events time happened before or after they became firefighter or indeed whether the traumatic event happened as part of their job or within their personal life. Therefore, a new checklist should include time event in order to make it possible for the result to be clearer specifically with first responders.

### ***4.9 Conclusion***

In this study, the prevalence rates of traumatic events were investigated. The majority of the participants reported a different type of traumatic event and a full set of PTSD symptoms. In addition, firefighters who reported partially

PTSD symptoms might need some support for the future to help them to reduce the possibility of developing fully PTSD symptoms. Participants who reported PTSD symptoms also reported high levels of depression and anxiety. This depicts the effects of firefighter's job and the need of some type of assistance to heal the traumatic experiences that individuals have faced. They reported the using of active and passive coping strategies suggest that these should be necessary elements of an intervention programme for helping Saudi firefighters overcome PTSD symptoms from their stressful work environment, as well as comorbidity symptoms.

The questionnaires were completed by the participants themselves and returned to the researcher. Thereafter, some participants started to contact the researcher with several questions associated with the questionnaires, and started to explain their experiences related to their work environment. A limitation of quantitative research is that the questionnaire required the selection of one answer only. It became obvious that participants felt the need of relate their experiences from their work environments. Some participants even requested an appointment with me (the researcher) to tell their experiences. In a meeting, one participant talked about his work environment and how he became a firefighter. At the end of the meeting, the participant described feeling better, which supports the notion of using narratives as a therapeutic technique to facilitate improvements in individuals' psychological well-being. In the next chapter, the life stories or narratives of traumatised firefighters are considered from a more qualitative

perspective – both their life experiences before becoming firefighters and after becoming firefighters.

## Chapter 5: The Life Story Interview

### *5.1 Introduction*

The literature review discussed the risk factors for PTSD in terms of trauma history, depression, anxiety, coping strategies, and social support among Saudi firefighters. The purpose of this chapter is to explore the life stories of Saudi firefighters in order to examine individual experiences and to assess the psychological impact of these on their lives before and after becoming firefighters. In this qualitative study, nine of the participants who fully met the criteria for PTSD, as described in Chapter 4, participated in a life story interview (LSI). It is also necessary to assess the traumatic memories of Saudi firefighters and understand how they are presently coping with the traumatic events. Finally, the impact of the LSI is assessed in order to inform the narrative intervention study.

For this research, a narrative approach was selected, since the narrative is a basic human way of making sense of the world (Metcalfe, Woodhams, & Patterson, 2008). Through enabling participants to present their experiences, thoughts, and feelings as a story, the narrative approach allows the researcher to obtain a deeper understanding of participants' lives. This qualitative method also enables us to gain access to the social and psychological impact of participants' experiences. Moreover, through narrative, the identity of the individual can be expressed and even transformed. This is because, through the narration of the stories, individuals seek to know or reveal themselves to others (Sarbin, 1986).

The formula of the narrative refers to its overall structural shape (McAdams, 1996, 2001). For instance, a progressive narrative presupposes a constant upward trend, with no low points or nadirs, while a tragic narrative assumes a constant downward trend, particularly in its presently conceived 'ending'. A redemptive (McAdams, 2006), form of narrative is characterised by ups and downs with challenges followed by growing gains and, consequently, upward trends.

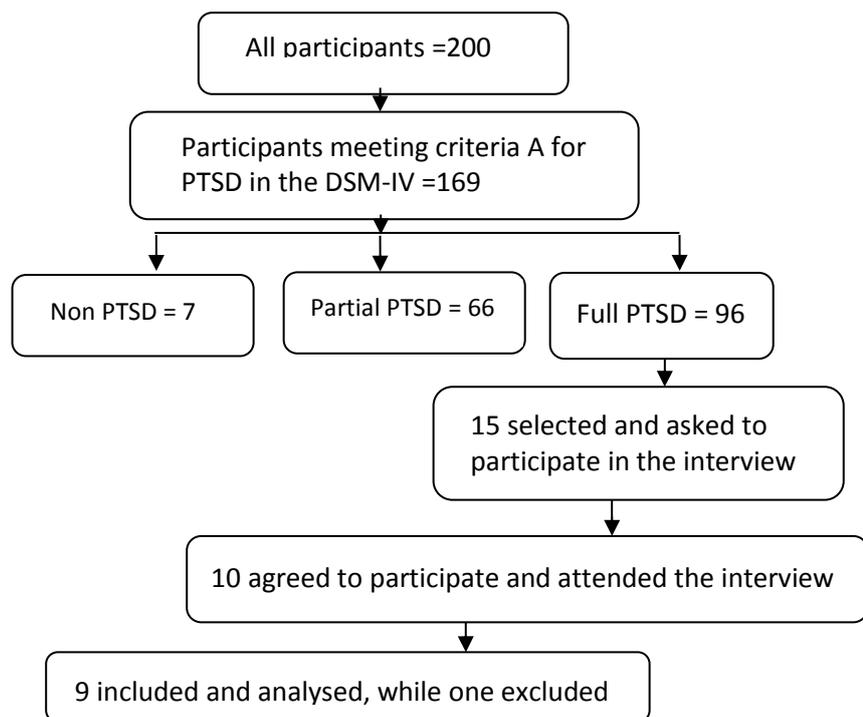
In order to achieve these research goals, McAdams's (2008) life story interview (LSI) method was used. This offers a practical approach for understanding the narratives of traumatised Saudi firefighters. Baerger and McAdams (1999) argue that, from reflecting on specific events in the individual's life, a coherent life-story can be constructed and subjected to quantitative analysis. They have also demonstrated a significant relationship between telling one's life story and psychological well-being. The chronological and causal order of events is important for understanding the past and present lives of individuals, while the positive and negative events of a person's life constitute the life plot line. The aim of this chapter is to determine the extent to which the narrative will constitute an effective therapy for Saudi firefighters, in terms of improving their coping strategies and enhancing their psychological well-being. Accordingly, the following research questions are addressed:

1. What is the experience of becoming a firefighter in Saudi Arabia?

2. What types of experiences do firefighters have and how have they made sense of these experiences?
3. What is the impact of family and education on firefighters' coping strategies?
4. Did the life story interviews have any impact on the firefighters, and if so, was this impact positive or negative, and why?

## 5.2 Method

### 5.2.1 Participants



**Figure 5.1: The sampling stages for participants in the qualitative study.**

The participants were recruited in this study through several stages as shown in Figure 5.1. Firstly, the participants who fully met the PTSD criteria, based on

their scores on the self-report scales from the first study (Chapter 3), were selected to participate in the life story interview (LSI) study. Ninety-six participants fully met the PTSD criteria, and 15 traumatised firefighters were selected randomly by using computer random sampling. The participants were contacted by telephone and invited to participate in this study. The purpose of the study was presented, and information about the LSI was described in terms of the estimated length of the interview, audio-recording of the interview, and the outcome of the data analysis (that it forms part of a PhD thesis and might be also presented at conferences or published in international journals). Participants were also made aware of the risks and benefits of participating in the interview, both during the interview and afterwards. In addition, they were informed that they were free to withdraw from this study at any time before the data is analysed. Ten firefighters agreed to participate, while five declined to take part in this study. One interview was excluded as a result of a technical problem with the audio-recorder, and there was insufficient information to include this participant's interview in the results. The final sample consisted of nine traumatised firefighters, with their ages ranging from 26 to 37 years, and their years of experience of working as firefighters ranging from 3 to 14 years. Seven participants were married while two were single; four had high-school-level education, one had up to primary school level, one had up to undergraduate level and four were currently in part-time tertiary education. Table 5.1 shows these participant characteristics, including age, level of education, marital status, and years of service.

**Table 5.1: Participants Characteristics (n=9)**

<b>N</b>	<b>Pseudonym</b>	<b>Age</b>	<b>Level of education</b>	<b>Marital status</b>	<b>Years of service</b>
1	M.G.	33	Secondary school	Married	9
2	F.TH.	34	Part-time undergraduate	Married	10
3	A.Y.	29	Part-time undergraduate	Single	9
4	AZ.G.	28	Undergraduate	Married	8
5	A.QH.	32	Part-time undergraduate	Married	7
6	A.TM.	26	Secondary school	Single	3
7	A.K.	29	Secondary school	Married	4
8	K.HT.	37	Primary school	Married	14
9	S.T.	27	Secondary school	Married	4

**Note:** Secondary School in the KSA is the same as primary school in the UK or elementary school in the US; High school in the KSA is the same as secondary school in the UK.

### 5.2.2 Interview schedule

A semi-structured interview schedule was devised in order to explore the life story and history of the participants in terms of: life chapters, key scenes in the life story, challenges, life themes and indications, and future scripts.

Moreover, the positive and negative points in the life plot line of the participants were identified. The experience of being a firefighter was considered and, at the end of the narrative, participants' feelings about the interview were explored. McAdams's (2008) life story interview was adapted for this study because, although it was originally devised for use in individualistic societies and cultures, it has sufficient flexibility for use in other societies and cultures. The questions pertaining to society and cultural questions were therefore adapted to suit the Saudi cultural context and the

aims of this study. The next two sections clarify how the life story interview schedule was developed and adapted.

### **5.2.2.1 Developing the interview guide**

The life story interview has not previously been used in any Arabic studies associated with PTSD symptoms among first responders. It was therefore necessary to adapt the interview according to Saudi culture and the aims of this study. First, the following six areas of inquiry were identified:

- i. The life chapters of participants from the perspective of the participants, both before and after becoming firefighters.
- ii. Key scenes in the life story of the participants including: high points, low points, and turning points; and positive and negative events in both childhood and adulthood. In this study, these scenes include the thoughts and feelings of the participants while focusing on traumatic events and psychological problems.
- iii. Challenges including life and health challenges as well as failures.
- iv. Life themes and indications to infer the major themes in their lives.
- v. Future script concerning the participant's hopes, dreams, and plans for the future.
- vi. The impact of the interview is assessed through asking about the participant's positive or negative feelings and asking them to justify why they feel that way.

Secondly, questions associated with these six areas were discussed with the research supervisors. The interview schedule for the life story interview appears in (Appendix D).

### **5.2.2.2 Piloting the interview**

The interview questions were piloted on one Saudi firefighter who has experience of traumatic events. Lasting 50 minutes, the pilot interview was recorded on a digital voice recorder. However, the data were not included in the main study because the interview guide was amended as a consequence of the pilot study. First, the interview questions were translated into English by the researcher whose native language is Arabic and two Arabic PhD students who were studying clinical psychology and had experience in traumatic stress studies. Secondly, the interview questions were presented to the participant. He was then asked to give feedback about the questions in terms of their level of difficulty and any changes to be made to the interview questions. A few amendments were made to the language of some of the questions in order to make them clearer and more suitable to the participants.

### **5.2.3 Procedure**

Before the interview, potential participants were given an information sheet to read and a consent form to read and sign (See Appendix B, p324). The interview time and place were arranged with the (initial ten) participants. All interviews took place over a period of one week in September 2012. Some interviews took place either in the participants' houses while others took

place in a location of mutual convenience, such as the local mosque in the fire station. Some took place in a private office in the fire station. The semi-structured interview schedule was followed, and the participants were encouraged to answer all the questions. The interviews were recorded using a digital recorder, with each interview lasting an average of 65 minutes, with a range of about 50 to 80 minutes.

#### **5.2.4 Analysis of the life story interview transcripts**

The interviews were transcribed and translated from Arabic into English by the researcher in order to conduct the analysis. The accuracy of the English versions of the nine transcripts was checked by two Arabic PhD students who were studying clinical psychology and had experience in traumatic stress studies, after they had signed a confidentiality agreement. I then analysed the narrative content using two different methods of analysis. Firstly, thematic analysis was conducted to develop themes and allow for the comparison and discussion of the data across all nine participants. Secondly, I used narrative personality analysis, based on two participants.

In order to conduct thematic analysis in the most effective way, I used the six-phase approach recommended by Braun and Clarke (2006). The researcher starts by familiarising him- or herself with the data, through reading and re-reading the transcripts. The researcher then generates the initial codes and collates data relevant to each code across the entire data set. The third phase entails searching for themes by ordering the codes into potential themes and gathering all data related to each. The fourth phase entails reviewing the

themes to determine whether they work in relation to the codes and the entire data set, followed by generating a thematic map of the analysis. The fifth phase entails defining and naming the themes through ongoing analysis to improve each theme and the overall story that the analysis expresses. The final phase is producing the report.

The secondly method of analysis researcher deployed was narrative personality structural analysis (Riessman, Kohler, 2002). This was conducted in order to explore an integrative narration of the person's personal past, present, and future. From the participant telling his life story, the life plot trend of the participant's life can be drawn. The form of the narrative refers to its overall structural pattern (Amia Lieblich, Rivka Tuval-Mashiach, & Tamar Zilber, 1998). For example, a progressive narrative assumes a constant upward trajectory only. In contrast, a tragic narrative assumes a constant downward trajectory, particularly in its presently conceived 'ending.' A redemptive (McAdams, 2006), or descent-and-gain (Amia Lieblich et al., 1998), form is characterized by ups and downs, with challenges followed by cumulative gains and, thus, upward trajectories.

The first aim of this analysis is to highlight the participant's life before and after becoming a firefighter, as well as the traumatic events that they had experienced. The second aim is to find interactions between the main aspects of Saudi firefighters and the result of these interactions. The third aim is to assess the impact of the interviews among the participants. Accordingly, the narratives of the nine participants have been analysed and presented below.

### ***5.3 Results***

In this study, some of the themes identified from the life story interviews overlapped with some of the factors that were used in the questionnaire study in Chapter 4 which have been used to predict the occurrence of trauma or PTSD symptoms in particular. This includes a significant link between anxiety, depression, passive coping and PTSD symptoms. as consequence of the overlapping between PTSD, depression and anxiety symptoms, the result also found some variables predicted depression including: years of service, passive and active coping whereas low level of education, passive and active coping predicted anxiety.

The present study contributes to increasing some of the existing knowledge and understanding surrounding trauma in among traumatised firefighters in Saudi Arabia and also discussing new factors which participants considered important, such as the family living condition, education as well as the impact of the interviews to provide in-depth accounts of the effects of narrative.

The contents of Saudi firefighters' life story interviews, organised by themes and subthemes, is presented in Table 5.1.

**Table 5.1: Saudi firefighters' life stories: Themes and subthemes (n=9)**

Themes	Subthemes
<b>1 Family</b>	<ul style="list-style-type: none"> <li>→ Living conditions</li> <li>→ Responsibilities</li> <li>→ Personal trauma</li> <li>→ Support</li> </ul>
<b>2 Education</b>	<ul style="list-style-type: none"> <li>→ Difficulty</li> <li>→ Opportunity</li> </ul>
<b>3 Firefighter's experiences</b>	<ul style="list-style-type: none"> <li>→ Negative               <ul style="list-style-type: none"> <li>→ Traumatic event</li> <li>→ Working hours and shift work</li> </ul> </li> <li>→ Positive</li> </ul>
<b>4 Coping strategies</b>	<ul style="list-style-type: none"> <li>→ Active</li> <li>→ Passive</li> </ul>

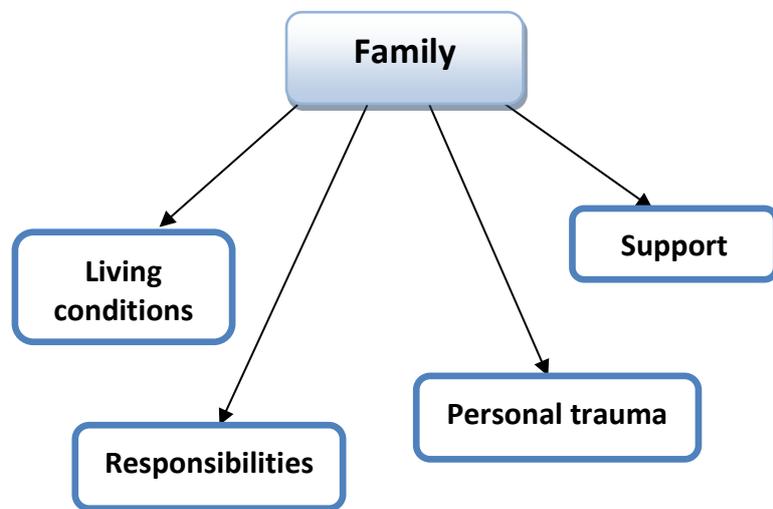
Some of the themes identified in Table 5.1 above are similar to the factors extracted from the cross-sectional study in Chapter 4, such as traumatic events, coping strategies, and education themes, while other, new themes emerged from the thematic analysis, such as family living conditions and family responsibilities, and the experience of becoming a firefighter. Other new factors which participants considered important included their background life, the role of religion, and the firefighter's job. They also provided in-depth accounts of the emotional impact of their life story interview. Through identifying these additional factors, the current study

contributes to existing knowledge and understanding surrounding trauma among Saudi firefighters.

### ***5.4 Thematic analysis***

In this part of analysis, the themes and subthemes from the participants' narratives are presented and discussed.

#### **5.4.1 Theme 1: Family**



***Figure 5.2: A thematic map of the 'family' theme***

The individual's life can be affected by childhood conditions and extended family life circumstances in both negative and positive ways. Some participants experienced stressful and traumatic events during childhood and in adulthood, described in more detail below. The negative psychological impact of these experiences may have predisposed them to developing PTSD symptoms, anxiety, and depression. However, if the person's interactions with

their family are positive, these can help to protect the individual from the more negative events.

#### **5.4.1.1 Living conditions**

Family structure, the family's culture, and the family's income sources may exacerbate the stressful experiences of the participants. Some participants spoke about the bad living conditions that they experienced in childhood, associated with the extended family life that is common in Saudi Arabia.

These may play a significant role in their current life, compounding the negative psychological impact of their stressful work environment. It follows that a participant who has complex circumstances, arising from the combination of their family life and their job, is more likely to develop mental health problems. One participant, M.G., described how the poor living conditions of his youth made him determined to escape the poverty:

*We are Bedouins and live in tents, but almost six years ago we moved into a house... We herded sheep and camels ... Our lives were difficult, and we used to walk to school... At the time of the rains, our fatigue increased because we lived in a tent, and thus everything was affected in our house. (M.G., lines 5-7; 21-22).*

This same participant refers to a source of income for his family:

*We have also been working to collect aluminium cans which we then sell to get money and help our family. (M.G., lines 36-37).*

When a family or community's socio-economic standing deteriorates due to circumstances outside of their control, this can lead to negative feelings and behaviour. In addition, the family and community's standard of living can play an important role in shaping an individual's personality and behaviour. One participant described his negative feelings and behaviour when the conditions of his family life changed suddenly for the worse:

*When we arrived in Jeddah city at night, I slept because I was tired. I woke up in the morning and went outdoors to see the city... I was really shocked by the house, road, neighbourhood, and people in the street. I started my day fighting with a person in the street. (AZ.G., lines 14-16).*

Another participant discussed how his family's abject living situation prompted him to escape from the family home. Uneducated parents who are living in poverty struggle to bring up their children to follow the right trajectory, as K.HT. explained:

*There was no support as a result of having uneducated parents and the life of the house fostered ignorance and was poorly off financially. So, I ran away to play outside the house every day. (K.HT., lines 6-8).*

The participants described numerous negative childhood experiences that had an adverse impact on their lives, in some cases. When people have experienced deprivation and neglect in the family home, the second stage of their lives can become indisputably worse. Therefore, some participants might be attracted to the job of a firefighter as consequence of their adverse

childhood experiences in order to find income source.

#### **5.4.1.2 Responsibility**

Participants' narratives described the many responsibilities that they have had throughout their lives as part of Saudi culture. These responsibilities were largely associated with the birth family (parents and siblings). Some participants defined the responsibility of their family as optional while others said that it was expected of them. They discussed the negative impact of these responsibilities throughout their lives and on their lives today. One of the participants described this situation as a turning point in his life. For example, F. TH. left university to find a job to help his mother and sisters as they had been abandoned by his father, who had married a second wife and subsequently ignored his first family. He said:

*Taking responsibility, I brought my mother and sisters with me to the city where I am working and rented a flat and became responsible for a large family at an early age (F.TH., lines 60-61-62).*

Because brotherhood is a strong part of Saudi culture, some people may change or adapt their life to support their brothers. One participant (A.Y) spoke about supporting his brothers to get married, while another participant left school for a long time to support his brother, when his brother was hospitalised following a serious car accident. S.T. described this by saying:

*I left school in order to facilitate my brother who was in hospital for eight months as a result of a traffic accident. I spend most of my time with him even at home to help him. (S.T., lines 31-32).*

On the other hand, other participants found these responsibilities necessary. Due to the cultural values and standards that they inherit, as well as their religious heritage, they found themselves in a conflict situation: overworked, and neglecting their basic family (wife and children) in order to support their extended family. K. HT. gives some insight into how these negative psychological effects impact on their life course:

*I was suffering from debt related to my own and my brother's marriages. Unfortunately, a new problem appeared which related to my younger brother who wanted to marry but he did not have any income. I sold my house in order to support my brother's marriage. I have not felt financially stable yet, and I have taken even more responsibility for all my family members since then. (K.HT., lines 39-43).*

Another participant described the responsibility he had assumed for his father's health problems as well as his extended family:

*My old brother works in another city, and my father was suffering from health problems, making my home responsibilities accumulate in terms of looking after my mother and sisters, and the frequency of travelling between the hospital and home because of my father health. (A.TM., lines 28-30;32).*

Participants' narratives illustrated that the more responsibility they assume, associated with their extended family, the more negatively their lives are affected. Mental health can be seriously affected in those who overwork while trying to manage under strained financial circumstances. These situations led them to neglect their education and focus on the needs of their extended families.

### **5.4.1.3 Personal trauma**

Traumatic events can happen to people in the course of their personal (non-work-related) lives. Physical abuse and the sudden death of close family or friend are the most common traumatic events experienced by the nine participants in their personal lives.

#### **5.4.1.3.1 Physical abuse**

Some participants' narratives presented physical abuse in the first stage of their lives. Individuals who experienced traumatic events in childhood may or may not develop PTSD symptoms (Bessel A van der Kolk et al., 2009); the early trauma can affect the next stage of their life either positively or negatively (Ford & Courtois, 2009). Children exposed to multiple traumatic incidents tend to show higher rates of depression and anxiety disorders (Copeland, Keeler, Angold, & Costello, 2007). Some participants in this study experienced physical abuse from their family while others were abused at school. For instance:

*I slipped into the water and I was afraid when my parents hit me hard about this accident. My feeling was a fear of drowning and the*

*recurring pain from being hit after that. My thinking was almost turned off, I felt miserable about why this is happening (A.QH., lines 160-164).*

Such perceived injustices may impact on children negatively. Some participants narrated incidents that happened long ago in childhood, yet were still fixed in their memory and could not be forgotten. If children have been strongly controlled by physical abuse perpetrated by the father, for example, they may develop a sense of guilt because their relationship with their father is dysfunctional, which may lead to a lack of self-esteem. One participant described his feeling during the narrative and said:

*One of the reasons that compelled me to use drugs is the severe beatings from my father. Upon returning to the house, I was surprised because my father had got it into his head that I had ripped the holy Quran in the mosque. So he hit me hard until our neighbour came to solve the problem and rescued me (AZ.G., lines 140-145).*

Other participants experienced physical abuse at school from teachers. For example, A.K. discussed avoiding the school as a result of physical abuse from the teacher:

*In Year ( 5) at school, I felt disturbed by some teachers as a result of their methods. One teacher hit me so severely that I refused to go to school without my parents' intervention and they sorted out the problem. My feeling was fear of and hatred for the school (A.K., lines 116-118).*

As these quotes indicate, participants described feelings of intense fear, horror, and disturbance in response to physical abuse. People who experience physical abuse have a high risk of developing PTSD symptoms (Roth, Newman, Pelcovitz, van der Kolk, & Mandel, 1997).

#### 5.4.1.3.2 Death

In addition to physical abuse, participants' narratives focused on traumatic events associated with loss. Death was the most common traumatic event mentioned by the participants. Participants who had experienced the death of a family member or close friend described the negative emotional impact. The psychological impact may be exacerbated when the death is sudden and involves young people, such as a car accident. One participant (M.G.) experienced repeated losses when he lost two brothers, a relative and close friend at different times. As M.G. describes:

*Unfortunately my brother died in a car accident. I was badly traumatised and postponed my wedding for one year and three months. Then I decided to get married at the same time as my second brother. Unfortunately, my second brother also died in a car accident. So, due to this second trauma I postponed my wedding one year... I also lost my cousin and one of my close friends whom I considered my brother. I am very sad about losing them.* (M.G., lines 93-98; 235-236).

Another participant described his negative feelings of fear and sadness when a relative was killed unexpectedly by a weapon during a happy time. A.K. narrated his feelings by saying:

*My uncle died as a result of disease and, as he was very close to us, I was deeply saddened. Also, my aunt died as a result of misuse of a firearm by the son of her husband, which made me frightened and sad too. (A.K., lines 167-169).*

Another example of loss narrated with a tone of sadness was from participant who was awaiting the arrival of a close relative who was travelling from another city. Upon receiving bad news, he reacted with feelings of denial:

*While my close relative was attempting to visit us in Makkah city, he had a car accident which led to his death, and this incident was one of the hardest events in my life. (S.T., lines 65-66).*

Another participant's narrative presented negative feelings as a result of his father and grandfather's deaths. This was the case of F.TH., mentioned above, whose father had abandoned one family to start another. F.TH. described these problems with his father as a turning point in his life, since it was then up to him to support his mothers and sisters, which he did by leaving university and finding a job. With a tone of sadness, F.TH. described the situation as follows:

*I stayed with my father at the hospital despite the distance, and got a holiday form in order to be close to him until he died, nine months ago. Then, my grandfather died almost three months after the father. (F.TH., lines 195-197).*

Participants' narratives discussed death as a traumatic event. The death of a family member or close friend is one of the risk factors for developing the PTSD symptoms. The trauma may be compounded by feelings of guilt about the relationship between the participant and the deceased. According to Gershuny, Cloitre, and Otto (2003), the intervention between the affective experiences of fear, helplessness and horror as a consequence of the event, time since the event happened, and the number of traumatic events experienced, can indirectly affect the participant and increase the risk of PTSD symptoms.

#### **5.4.1.4 Support**

One of the significant values of many cultures is family support. A source of social support, family support can help traumatised individuals come to terms with their experiences. Conducting a meta-analysis, Brewin and Holmes (2003) investigated 14 risk factors for PTSD including social support. They found that social support can affect the rate of psychological disorders such PTSD symptoms, both negatively and positively. Some participants received both practical and emotional support from their families. For example A.Y. received practical support which helped his confidence after his parents got divorced. He described this by saying:

*One day, my aunt woke me up and said 'Let's go and buy a car for you'. I could not believe it, because I was almost 13 years old, and I had not got a driving license yet. She said: 'I sold my land in order to buy a car*

*for you'. I was very happy and my thinking was focused on how to learn to drive and go everywhere (A.Y., lines 108-112).*

Even though some participants received practical support from their family, emotional support is also significant for increasing well-being and enhancing their ability to cope with adversities, as S.T. argued:

*I have some problems related to my job and my manager, and the accident of my cousin which make me sad. My family and my wife shared this problem with me, which helped me a lot. (S.T., lines 128-129).*

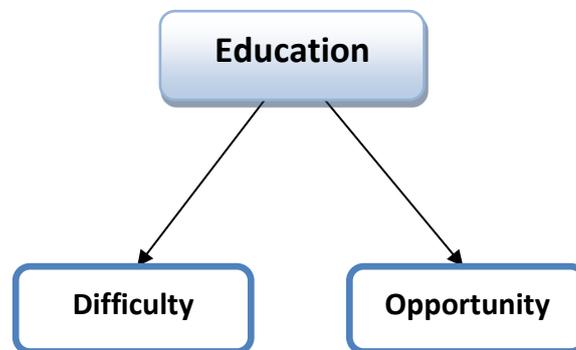
Another participant described the emotional support that he received from his family when he returned from his firefighting service shifts:

*My wife and children have made my life more comfortable, providing optimism and stability when I return home to find comfort, tranquillity and happiness. This affects my life positively. (K.H.T., lines 74-77).*

The above quotes highlight the positive influence of family support. Such support is likely to help traumatised people to cope with traumatic memories and adjust to 'normal' life. Understanding the influence of family members or close friends on the affected person is the first step in identifying coping strategies for mental health problems. It appears that sharing problems, discussing problems, and starting to narrate around the problem to someone close, such as a spouse or a close friend, may help to reduce negative emotions.

Living with an extended family can affect the participants' lives, both negatively and positively. On the negative side, their living conditions may be difficult, while taking on responsibility for the extended family seriously impedes their educational progress. Have discussed the family as the first theme, the next theme explores the extent to which education matters are challenged.

#### 5.4.2 Theme 2: Education



*Figure 5.3: A thematic map of the 'education' theme*

In general, a good education is a prerequisite for applying for a good job. A person's future career, including their career goals and aspirations, can be shaped by various factors, including family and peers. The participants in this study confronted a number of challenges influencing educational success. These included: family living conditions, family responsibilities, and the future career aims of the participants. These may impact the participant and affect their lives negatively.

### 5.4.2.1 Difficulty

Participants' narratives recounted a range of educational problems connected with their current life. For some, the problem started at primary-school level, while for others, it started later, at high-school level. Poor educational outcomes may be exacerbated by factors such as non-educated parents; childhood neglect; frequent absence from school, and academic comparisons between students. K.HT described the primary (elementary) level of education as a psychologically complex stage because he started with his brother; however, he failed several times in primary school:

*At primary school, I was studying with my brother in the same class and I failed in the first year. This impacted on me psychologically, which made me take ten years to pass primary school (K.HT., lines 5-6).*

Other problems suffered by K. HT. included having his father working at the same school while he was attending it. He describes how these conditions blocked his thinking and arrested his academic progress:

*I was struggling at the primary school and with the success of my brother. So, I felt frustrated, not being able to do anything. I had no one to share these feelings with. My thinking was almost turned off and this affected my life which has deteriorated until now. Moreover, my father worked at the same school and constantly asked about my progress, which created a poor learning environment (K.HT., lines 91-92-93-94).*

Low motivation, absences from school, and disturbances in the surrounding environment can adversely affect a person's educational progress, making it a challenge. Violence may also increase among students who failed school regularly, as A.QH. reasoned:

*I was the oldest one among my friends as a result of the frequent failure. I repeated Year 4 four times and Year 5 twice. I also failed in the first year of high school as a result of clashes. It was also not my desire to study, and I had frequent absences from school. (A.QH., lines 32-34; 72-74).*

Participants present a number of factors which affected their educational progress and future life-course. When they struggled in the first level of school, the second stage became worse. The pressure was compounded by neglectful and non-educated parents, may be resulting in frustration, depression, and anxiety for the participants as students.

#### **5.4.2.2 Opportunity**

One of the biggest challenges among students is meeting the criteria that would enable them to access higher education. Even though higher education is free for Saudi citizens, university requirements are challenging for some students. They include the General Aptitude Test (GAT) and the Achievement Test (AT), adding to the high school level test. Some students from rural areas find it difficult to access the university education system, while others do not take the challenging requirements into consideration early and then lost the opportunity to access the universities. Having better skills can improve

people's employment opportunities.

*When I started my job in the civil defence, the high ministry contacted me to inform me that I had been accepted to study computer science in Singapore on a scholarship. Unfortunately I could not because my job system did not allow me to leave unless I worked there for four years. So, I lost this opportunity. (AZ.G., lines 65-68).*

AZ.G. encouraged his brother to continue his higher education. He supported him to strive for what he could not achieve. He also said:

*When I missed the opportunity to study, I tried to achieve this for my younger brother and I constantly supported him until he graduated from high school with honours and enrolled at Saudi Aramco Oil Company, and I will make the same effort with my remaining brothers. (AZ.G., lines 95-97).*

Another participant postponed the opportunity of a tertiary education in order to resolve some family-related problems. However, he found himself losing this opportunity forever, as he explained:

*I am the victim, and I need to complete my education and look after my private life but circumstances have forced me to sacrifice this. (F.TH., lines 103-104).*

Participants who could not meet the university requirements felt sad and frustrated, which may increase the risk of developing psychological disorders.

One of the participants described this situation by saying:

*I wanted to complete my studies but I could not due to lack of acceptance and I felt sad and frustrated. (S.T., lines 90-91).*

Participants' narratives reflected the negative aspect of educational opportunities in that they were unable to take advantage of the opportunities. They also described their feelings during the narrative. Some of the participants were extremely frustrated, while another became upset and sad. One participant expressed his negative feelings about his missed educational opportunity through trying to achieve the lost opportunity through his brothers. Such findings highlight a significant negative reaction against the lost educational opportunities, because participants' futures have been affected.

A significant positive point about some participants is that they are continuing their education in part-time programmes. As a result of their hard work and low incomes, when they attain a new degree, they will likely get a promotion at work. However, other participants view this situation as an opportunity for self-esteem enhancement. This can be considered as a redemptive way to make the life better. For example,

*I thought to complete my education not for my work but for myself...*

*And I am now studying part-time at the university. (A.QH. lines 190-191).*

Similarly, another participant indicated that he is pursuing tertiary education for personal fulfilment rather directly than for work purposes:

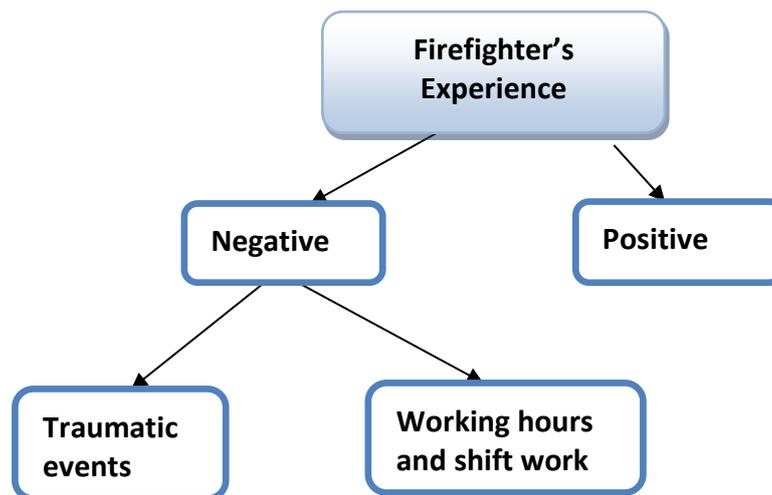
*My mind is on university during work time, and I decided to continue as a part-time student. Although the interest is great for my work, I need to achieve my desire. (F.TH., lines 89-91).*

Participants' narratives reflect some positive goals associated with educational achievement, which indicate an enthusiastic attitude towards education and redemptive issues, that is, striving to follow the right trajectory. This may also be as a result of a stressful job and the intention to change their job in the future. On the other hand, some may have the aim of getting a promotion and increasing their income.

According to their educational circumstances, the participants often took a long time to find a job because of their lack of qualifications, sometimes several years. Family living conditions and family responsibilities clearly impede their educational progress. The challenge associated with accessing the higher education system as well as losing opportunities to study at university could in addition have an adverse psychological effect on them, making them feel discouraged. Socio-cultural differences can significantly modify the relationship between the type of stressors and the type of

psychological response, with unemployment in Saudi culture being a particular source of stress. Upon agreeing to become firefighters, participants then confront the negative sides of this job. When participants found themselves in challenging situations, developing coping mechanisms is the first line of defence for adapting to this challenge. Having discussed the themes of family and education; the next theme concerns participants' experiences of becoming firefighters in Saudi Arabia.

### 5.4.3 Theme 3: Firefighter's Experience



**Figure 5.4: A thematic map of the 'firefighters' experience theme'**

Some participants became firefighters as a consequence of urgently needing a form of income. This may have led them to accept a firefighting job without considering the positive and negative aspects of the job. In this theme, the experience of becoming firefighters and the positive and negative aspects of this job are presented below.

### 5.4.3.1 Experience of becoming firefighters

The reasons given by participants for becoming firefighters varied. Firstly, some participants were struggling with their studies and not passing the different levels of their education. Secondly, most of the participants have responsibilities associated with their extended families. Thirdly, the unemployment rate has increased in Saudi Arabia during the last decade (Ramady, 2013). Therefore, opportunities for participants to find a suitable job may be easily have decreased. Some participants spent between two to six years looking for a job after they achieved their high school diplomas. All the nine participants previously had no intention of becoming firefighters. However, after having spent a long time searching for a job, they capitulated to becoming firefighters. One of the participants, who searched for a job for a long time, has not achieved his aspirations. As he explains:

*I started looking for a job and I imagined I would find a job immediately, but this took a long time for me. Then I accepted becoming a firefighter. My dream was that this job will fulfil all my hopes. But I discovered that the salary was not enough. (AZ.G., lines 62-65).*

Saudi Arabia's most powerful cultural symbols are those linked to Islam and the extended family kin-based socialising. Therefore, the relationship between the family members and their extended family is fairly strong. One participant A.TM. described the responsibility that he assumed for his

extended family, which compelled him to work as a taxi driver until he found another job. He said:

*I worked as a taxi driver to provide shelter, expenses and cater for the needs of my family... Then, I applied for a firefighter job and I waited for training to begin. (A.TM., lines 45-46; 48).*

Regarding the entrenchment in Saudi culture of the extended family kinship group, some people have a disposition which makes them happy to be around their family. Another participant described how he got a job by chance after six years, moving from one job to another in the same city where his extended family lives. He said:

*I moved in several jobs for six years and the salary was very low and not enough for daily expenses. I owned a car which I used as a taxi. One day I encountered someone in the internet computer room who was on the civil defence website applying for a job. I visited the website and filled out the form and sent it and forgot about the matter. After almost a week I received a communication from the Civil Defence to complete my papers and a month later started my training. (A.K., lines 38-39; 47-50).*

The difficulty of finding an appropriate job is compounded by the participants' low level of education and an increasing unemployment rate in Saudi Arabia. People in this situation may experience psychological problems such as depression, anxiety, and poor self-esteem (Paul & Moser, 2009). Therefore,

some participants consented to be a firefighter without motivation or background knowledge about this type of job, and none of them actually aspired to be a firefighter.

### **5.4.3.2 Negative aspects of being a firefighter**

Working as a firefighter has numerous disadvantages associated with the work environment. The life threatening situations that firefighters frequently find themselves in, as well as the deaths they encounter in the line of duty, and other traumatic events such as mass casualties and the death or injury of children, have been found to have an adverse effect on both their mental and physical health. Their working hours and shift-work patterns can also affect them negatively.

#### 5.4.3.2.1 Traumatic events

Many participants had witnessed a traumatic event in the course of their rescue work. Some participants described symptoms such as sleep disorders and nightmares. Others could not forget the image of a traumatic event for almost four years. These events are likely to predispose the participants to developing psychological disorders, and the participants will continue experiencing yet more traumatic events, potentially exacerbating the risk or severity of psychological disorder. F.TH. recounted the following incident:

*There was a fire in a minibus and when we attended to the incident, we did not expect that there was someone still inside the bus, but when we opened the door we found the charred body. I withdrew myself*

*from the scene. This picture still in my memory nearly four years later.*

(F.TH., lines 221-222-223-224).

Problem-solving skills and abilities are important for people who work as firefighters because these can moderate the effects of stressful life events (Baker & Williams, 2001). According to Goodman, Gravitt, and Kaslow (1995), individuals who are effective problem-solvers have a reduced possibility of experiencing psychological distress in stressful situations compared to ineffective problem-solvers. Therefore, firefighters who have poor problem-solving skills and abilities are likely to experience increased psychological distress. This may occur due to individual differences, such as a high level of sensitivity, or it may be due to insufficient training in psychological coping strategies. A.Y. explains what happened during a traumatic event by saying:

*I went up to the flat and the father of this family was trying to protect his children and all of them burned and the mother was pregnant... I could not sleep for three days because of the scenes I saw and the disturbing dreams I had. Even if I saw several incidents, I felt negligence and impotence regarding this incident. (A.Y., lines 76-77; 80-81).*

Another participant also reported feeling helpless when arriving to rescue a family who burned in front of him in the car as a result of a traffic accident. He reacted to the accident with tears and helplessness only. When he narrated the events during the life story interview, he was crying and he said:

*One of the bad car accidents that I have seen in my job life is that of a family (a man and his wife and four children). The girl and mother came out of the car because they did not use the seat belts, and their health is good. During the incident, the car started to burn as well as the father and the rest of the children inside it. When the mother saw the situation, which was very difficult, she could not control herself. I was crying and felt helpless, and all the people around the accident were crying. (S.T., lines 174-180).*

The participants explained clearly the psychological impact of witnessing traumatic events. Some of their narratives alluded to symptoms associated with PTSD, which raises the possibility of participants developing PTSD symptoms and PTSD comorbidity. Firefighters who have experienced traumatic events frequently are likely to experience an increase in associated psychological symptoms (Corneil et al., 1999).

Bodily injury is another risk factor for firefighters. Injuries in the line of duty as well as occupational diseases may have adverse psychological consequences because they may force firefighters to retire from their job early international association of fire firefighters (IAFF, 2000). Participant narratives described numerous event associated with bodily injury. There is generally a high risk of physical injury in the course of the firefighter's work, such as carrying out rescues. One participant injured on the job had the following to say:

*I fell from the roof of a water tank, breaking my nose. I was hospitalised and underwent an operation which cost me a huge of*

*money and I still suffer from the problem now, I still have pain from time to time. (M.G., lines 229-230-231).*

Firefighters who are injured in the line of duty may have to retire as a consequence of serious injury. Retiring in such circumstances may also predispose them to developing psychological disorders. According to IAFF (2000), 325 firefighters were forced to retire from their departments because of line-of-duty injuries or occupational disease directly related to firefighting such as lung and/ or heart disease or cancer.

#### 5.4.3.2.2 Shift work and time

To ensure fire cover in Saudi Arabia 24 hours a day, 365 days of the year, firefighters work '12-hours on and 24-hours off'. This shift system makes it difficult for firefighters to manage their day time because sometimes the shift is during the day time and/or at night. Participants' narratives described the negative aspects of shift work. Some of them want to leave the job, while others complain about the shift nature of the work and the long working hours, which are more than they expected. As M.G. said:

*Three years after high school I started my job in civil defence in the capital city – Riyadh city – and I thought of leaving the work, because it is hard and stressful. (M.G., lines 69-70).*

With regard to working hours, A.K. described the negative effect these had on his personal and family lives, which increased his anxiety and stress. The long

and shift-nature of the working hours can lead to a lack of family support, as he explained:

*As a result of the nature of the work, I spend a long time at work and come back to house tired and need to rest; this triggers the kind of discussions that increase tension. (A.K., lines 68-70).*

Another example is as follows:

*The hours of work impact my own life when I am away from my family for long hours. (A.QH., lines 118-119).*

Thus, participants described problems associated with the hours of their job which may compound the negative impact of the job, both psychologically and physically. Working under a high level of stress for a prolonged period of time can lead to long-term adverse effects on both their physical and mental health. Mental health problems that participants mentioned included the stressful nature of the work and the social isolation. Shift work that involves night shifts strongly impacts on the psychology and psychophysiology of the individual (Akerstedt, 1990). This significant point about the nature of firefighter's work in Saudi Arabia highlights the risk of exacerbating PTSD symptoms including related consequences such as anxiety and depression.

#### **5.4.3.3 Positive aspects of being a firefighter**

Even though working as a firefighter has numerous disadvantages, it also has some advantages. Participants' narratives included the positive impact of being firefighters. The financial benefits that accrue from the job was the

most positive point among participants, as it helped them to provide for basic needs such as a car, accommodation and marriage. Some participants received family support and encouragement when they got the job because they became employed and had an income source which increased the positive attitudes of both the family members and the employee. As A.TM. said:

*When I got my job, my family shared this success with me, especially my parents, when our conditions improved financially. My feeling was very happy especially when happiness alighted on my family. (A.TM., lines 67-68).*

Another participant highlighted the material support that they received from the job such as income which started to change his life conditions. As two participants said:

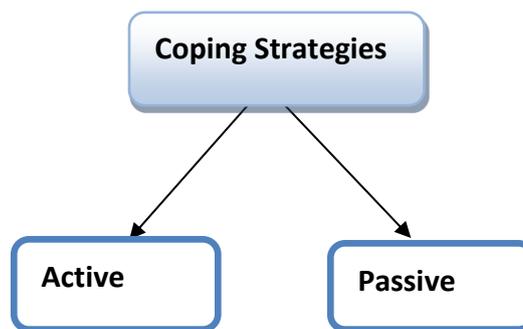
*Two years after beginning work in the civil defence, I was able to buy a car and get married. (S.T., lines 46-47).*

*I feel more confident as a result of the job that I got as a fireman, and the salary that I earn. (A.K., lines 52-53).*

Participants' narratives described their feelings about becoming firefighters. This feeling related to the job in general. They felt happy because they had found an income source, and changed their life positively. Their life conditions have changed for the better since they started to work and provide financially, especially the participants who came from a background of poverty.

The participants reflected on their experiences of becoming firefighters in terms of both the negative and positive aspects. The main reasons that led the participants to become firefighters might be their family living conditions and the educational challenges they faced. Having discussed the themes of family, education, and the experience of becoming a firefighter, the final theme concerns the coping strategies used by the participants to cope with the traumatic events they experience both at work and in normal life.

#### 5.4.4 Theme 4: Coping Strategies



**Figure 5.6: A thematic map of the 'coping strategies' theme**

Participants have been using both active and passive coping strategies for adapting to their stressful work conditions and stressful life environments as well as life events. Passive coping includes avoidant mechanisms and alcoholism whereas active coping includes praying or meditating and getting emotional support from others. These coping strategies were discussed in the participants' life story interviews.

Participants' narratives described a range of passive coping strategies which they used during stressful events, with the most common strategies being: avoidance, substance use, and drinking alcohol. Avoidance of anything

associated with the traumatic event is associated with the potential natural activation of the pathways linked to the memory for the original trauma. For example, A.Y. narrates how he avoids the time and place associated with the traumatic event. He said:

*Now I avoid this street so I do not need to remember the incident. And when Ramadan time comes it reminds me this family and incident.*

(A.Y., lines 82-83).

Other example of an avoidant coping mechanism was highlighted by A.Y. in another incident. He described how he avoided seeing the dead body of his relative, by escaping. His use of this passive coping strategy might be because the relative was killed in front of him, in a traffic accident. He described this by saying:

*When they brought the body home, I left the house, because I did not want to see the situation of great sadness. (A.Y., lines 189-190).*

Another participant described the way in which he avoids the time and place which reminds him of a sad memory related to his father's death. F.TH. said:

*But now even the Eid day came, I did not go to the village, and I spent my holiday in this city. Why? ... I ... I do not want to go and remember the sad memory, so, I avoided this. (F.TH., lines 205-206).*

Other coping strategies entail substance use and drinking alcohol. Even though drinking alcohol is banned in Saudi Arabia, some people nevertheless

use alcohol to cope with their problems. Some participants described these strategies by saying:

*Because the job stress led me to drinking alcohol and also using the drug... (M.G., lines 111-112).*

*When I was shocked about the new living conditions, my feelings were affected and reduced my life in every aspect for more than three years. I used drugs and practiced violence and sometimes theft. (AZ.G., lines 16-19).*

Participants described their coping styles for the stressful events that they experienced. Avoidance of the traumatic event is one of the most common strategies, and people who have difficulty recalling the memories used to use this strategy. Other passive coping strategies that have been used by the participants include substance use and alcohol use. Adopting a coping strategy is the second process after the traumatic event has occurred, and can play a role in predicting PTSD symptoms (Benight & Harper, 2002).

All the participants in this study were Muslims, and they made references to their beliefs in their life story interviews. One of the more significant active coping strategies mentioned might be that of religion. Some participants described religion as a first line of coping and feeling comfortable, as well as an expression of gratitude to be alive. In addition, part of the Islamic belief system is fatalism. This aspect of the religion was used by some participants to

accept the events and deal with problems, which may be helpful for their ability to cope.

*I coped with this problem by [relying on] the religion as you know. This loss should be accepted because this fate is from the god (Allah) (AZ.G., lines 200-202).*

The concept of fatalism in Islam is used by many Muslims to explain the hardships that Muslim people have had to endure during their life; such hardships are considered part of their destiny. S.T. described his use of this aspect of the religion as a coping strategy to adapt to problems as follows:

*This has been my religion as a kind of adaptation as a result of the difficult experiences in my job. (S.T., lines 172-173).*

A fundamental aspect of the conservative culture in Saudi Arabia is the segregation of males and females. The lack of an intimate relationship between males and females has been found to be a form of vulnerability which increases the risk of psychological disorders (Chaleby, 1986). Therefore, upon getting married, both males and females might receive an important source of emotional support from the community, and this can be seen to be a turning point among some participants. Participants' narratives described a shifting from negative strategies, such as drinking alcohol, to positive strategies, such as praying constantly. M.G. highlighted the reason for this shift when he got married and received emotional support from the community:

*Marriage has changed the course of my life for the better, away from drinking alcohol and I became a prayer constantly. (M.G., lines 148-149).*

Other participants found that the most positive points in their lives were at the point of getting married and afterwards because they received some emotional support and their lives started to stabilise. S.A. described feeling positive after he got married and had children which made his life better:

*The stage of marriage, and thereafter is a phase of stability for myself. I have a daughter after almost one year, and I am very happy at this stage. I am emotionally attached to my family (S.T., line 60-62).*

According to the participants' narratives, religion and marriage helped them to cope positively with stressful events. Religion might help them to avoid the more negative or self-damaging interpretations. For example, when a traumatic event happened, they attributed this event to fate rather than to their fault. Wahass and Kent (1997) contend that the choice of coping mechanism is affected by the person's cultural background, and Saudi people are most likely to use religious behaviour to cope. Marriage could be a source of emotional support and a turning point in the person's life. Therefore, these are the coping strategies used by the firefighters in this study to adapt to the challenges that they confront, and will continue to confront in their ongoing role as firefighters.

### 5.4.5 Impact of interview

Participants' narratives also referred to their feelings at the end of the interview. The emotional feeling affect is a primary feature of the interaction between the narrative and the memory because the narrative encourages verbal explanations of experiences. It is expected that negative emotions will be reduced as a result of integrating the information with pre-existing beliefs. Some participants reported feeling positive and comfortable after the interview might be because they had this opportunity to talk to someone about their inner psychological life. According to Saudi culture, men tend not to discuss their feelings because this can be perceived as complaining which may affect their personality negatively. Therefore, they keep their feelings inside. Others described fluctuating feelings when they narrated happy and sad events. For instance, asked at the end about the impact of the interview, AZ.G. responded:

*A positive impact, especially this opportunity to talk about important things in my human life. So, I feel happy and sad sometimes with an indication of weakness and strength and try to enhance the strengths and address the weak points. I felt comfortable because I talk. (AZ.G., lines 239-241).*

Another participant also reported a positive impact because he had had a chance to narrate key scenes in his life. This suggests that the narrating of their experiences is important for firefighters.

*Corresponding positive and a private talk with someone in addition to confidence to talk to someone about some important points in my life. I think this is a good chance for me. I feel very comfortable as a result of talking. (A.TM., lines 177-178-1479).*

Asking participants about the life chapters before and after becoming firefighters, is the first step in the interview. This question makes it possible for the interviewee to organise their life into stages and draw a clear picture. All the participants in this study were asked at the end of the interview to look back over their entire life story with all its chapters and events, extending back into the past and ahead into the future. They found that their life chapters and events appeared to be more organised and coherent to them than before the interview. Therefore, participants reported that classifying their lives into chapters and events (turning points) as well as the opportunity of narrating their life, was a positive process. As A.K. said:

*Reviewing the stages of my life and dividing it in stages. I feel comfortable as a result of speaking and the memory dump. I think the interview was positive and has helped me to regain and organise my life. (A.K., lines 201-202-203-204).*

Participants invariably described their feelings at the end of their interview as comfortable, which provides anecdotal evidence for the direct, intuitive view of traumatic memory and the psychological benefits of narrative therapy. In addition, disorganised trauma memories can play a fundamental role in developing PTSD symptoms (Burnell et al., 2009). Consequently, participants'

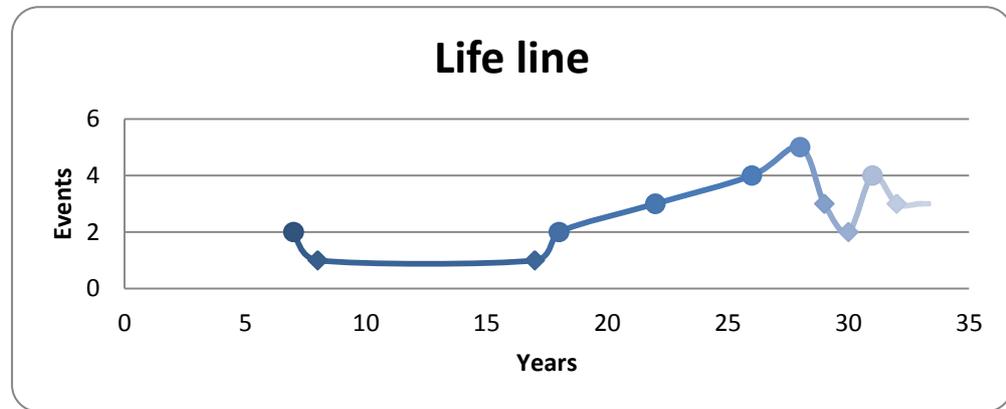
narratives reported more organised memories after the interview. Therefore, the positive feelings as a consequence of the story-telling can be helpful for informing narrative therapy for traumatised fire-fighters in Saudi Arabia. Moreover, these findings support the suggestion of using narrative techniques for traumatised Saudi firefighters and testing the efficacy of such narrative techniques among this population.

### ***5.5 Narrative analysis***

In this part of analysis, two of the nine cases have been selected for presentation as exemplars based on their ability to highlight patterns revealed across cases and analysed in terms of their narrative structure in order to obtain a more in-depth picture of the lives of traumatised Saudi firefighters, from which a narrative structure model can be derived as well as provides idiographic specificity on the cultural psychology of Saudi firefighters. In this part of analysis, the life plot line graphs include age and the positive and negative events in the participants' lives, with the important events highlighted on the life plot line.

### 5.5.1 Participant Number One: M.G.

The life plot line shown in Figure 5.7 below depicts the positive and negative points of M.G.'s life trajectory.



● = Positive event ◆ = Negative event

**Figure 5.7: M.G.'s life plot line graph**

M.G. was 33 years old. Married, he lives in a house in the countryside of Makkah city where he was born. He has worked as a firefighter for nine years. He moved from one fire station to another until he got a job at a fire station near his home. He was quite tall and slim and appeared to be tired. He started to complain about the stressful nature of the job and the working hours. He was happily anticipating the birth of his baby. The interview was carried out one afternoon in September 2012.

The participant's tone during the life story interview went through many ups and downs, but it was predominantly positive. While the participant described his childhood experiences, his tone was positive, but it became emotional when he was narrating the deaths of his brothers and his eyes overflowed

with tears. His past and present are marked with psychological wounds.

Nevertheless, in the second half of the interview, his tone ranged, in order, from anger to pride in his achievements and confidence for the future.

Figure 5.7 above shows the various negative and positive events of M.G.'s life plot line. The life plot line trend reflects the life chapters, which can be divided into three main phases: the extended family-life phase; the work phase and the marriage phase.

The main theme of the first phase of M.G.'s early life is that of a harsh childhood life in a poor family. He described the poor life conditions with a lack of family support, both financially and emotionally. He felt that this condition affected his educational progress negatively. The combined factors of his family background and poor education led M.G. to think of positive ways to support himself and his family to get them out of poverty.

M.G. found himself in his current job as a firefighter, not because he necessarily wanted to work in this environment, but because the main target of this stage of his life was to find an income source regardless of the job conditions. Once he found the income support, he built a new house, and accommodated his extended family with him which affected his life positively.

In contrast, this second phase of M.G.'s life was marked by a central theme of multiple losses and traumatic events. The participant's narrative contains a number of tragic events during this phase. When he was around 28 years old, he suddenly lost two of his brothers in car accidents, at different times, which made him traumatised and depressed. One year later, he lost a close relative

and close friend in a car accident as well which may affect the course of his life negatively. These traumatic events are likely to increase the PTSD symptoms and comorbidity PTSD. Significantly, these traumatic events occurred after he became a firefighter at the age of almost 20 which compounded the stress he was already experiencing as part of his job.

The third phase can be defined as a turning point in the participant's life. He got married after the multiple traumatic events of the previous phase of his life. Then, his life started to recover, as inferred from the positive feelings that he described during that part of his narrative story. This positive turning point may have come from the emotional source support that he received from his family.

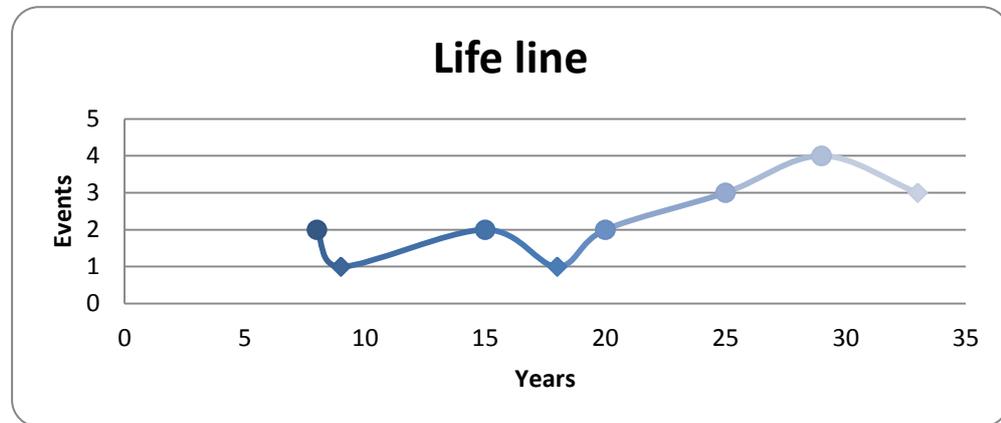
Overall, during the life plot line, M.G.'s life shows an upward trend. His narrative memory was stable until his narrative reached age 17 years. This might be the result of the consistency of the family's living conditions and surroundings which made it possible for the participant to accept and adapt. On the other hand, these conditions affected his education, making it difficult for the participant to make positive progress. Then, the participants' life trajectory started to improve gradually as a consequence of the positive turning point of getting a job and an income. He started to change the contours of his life and that of his extended family life when he built a house as a result of the financial support from the firefighter's job. This new stability is described by McAdams (2006) who argues that the main characteristic of this stage is steadfastness.

The traumatic events which M.G. narrated regarding the second phase of his life showed a downward trajectory in the life plot line, in addition to the stressful work environment. It is common for individuals to develop psychological symptoms as a result of such traumatic events. M.G.'s narrative described the coping strategies that he used to adapt to the situation, which included avoidance and alcoholism as well as a reliance on religion. In contrast, his narrative about his marriage and family support altered his life plot trend in an upward direction again. This recovery was largely a result of the emotional support he received from family.

M.G. planned to leave his firefighting job when he starts his investment business. However, he did not because his confidence was not enough in this time to be a business man. This type potential future growth and fulfilment forms part of the redemptive narrative described by (McAdams, 2006). The coping strategies that M.G. relies upon, as well as his family support and the income support of his job as a firefighter, have all played an important role in M.G.'s recovery, in both the practical and emotional aspects.

### 5.5.2 Participant Number Two: F.TH.

The life plot line shown in Figure 5.8 below depicts the positive and negative points of F.TH.'s trajectory.



● = Positive event ◆ = Negative event

**Figure 5.8: F.TH.'s life plot line graph**

F.TH. was 34 years old. Married with two children, he lived in a big flat in Jeddah city. He has worked as a firefighter for ten years and studies as a part-time student at the university. He was quite tall and healthy-looking. He had difficulty remembering his childhood and his narrative jumped from chapter to chapter in his life. The interview was conducted one morning in september 2012. He requested holding the life story interview in the mosque because it was a quiet place for him.

The tone of the participant's narratives was one of sadness and he sounded occasionally pessimistic at the beginning of the interview. As a result of the participant's sensitivity, his voice was quiet and the pace slowed down when he started to narrate the stressful events of his life; he sometimes paused and

re-narrated the events with the same tone. Towards the second half of interview, his tone became more optimistic and slightly confident.

Figure 5.8 above presents the life plot line of F.TH., which shows some negative and positive events in his life plot line. F.TH.'s life trend can be divided into three main chapters or phases: stability, family injustice, and the firefighter phase.

The central theme of the first phase is a cosy life, free of responsibility. The participant described a happy childhood life with a cohesive, extended family in a small village. Regarding his early childhood, he spent all the time with his grandmother until she died when he almost age 8. His educational progress was brilliant until his father got married to a second wife, when F.TH. was aged 17.

Thereafter, his comfortable, carefree childhood was replaced by adult responsibility. This phase was marked the central theme of a growing early awareness. He described feeling negative and starting to become aware of the injustice to his mother and sisters, due to his father abandoning the family. F.TH. tried to avoid this problem and started to look after himself. He started studying at the university in another city. However, he could not focus on his individual life as a result of his sensitive character, and his religious background and culture, which revolves around family integration, starting with mother, father, sisters, and brothers. He then decided to leave the university in order to find a source of income which would enable him to

overcome the injustice and get his mother and sisters out of their damaging condition.

With this stressful background, F.TH. found himself work as a firefighter. In this third phase of his life, the main theme is conflicted feelings. While narrating the happy and sad feelings that he felt in this phase, F.TH. stood up. He described feeling happy when he could make reparations for the injustice suffered by his extended family due to his father's leaving, and secure his mother and sisters' satisfaction, whereas he described feeling sad as a result of leaving the university and his individual life, and as a result of his stressful work environment.

According to the sensitive character of the participant, it may well be that the firefighter's job is inappropriate for him because this type of job needs individuals who are fit both psychologically and physically. For instance, when the participant suddenly saw a burned body during a rescue, he described feelings of fear, horror and helplessness which affected him strongly. This traumatic event and others can develop into psychological symptoms such PTSD. When his father subsequently died, he became depressed and sad. His depressed feelings may have compounded the self-blame might be as a consequence of the poor relationship between them. Subsequently, the participant got married and now has three children. He described feeling positive as a result of his marriage and the emotional support he receives. He has also started to study as a part-time student at the university. The positive points of this phase are starting to gain momentum in his life. Even though

the participant's job is stressful and difficult, his income is an important source of practical support for him. This positive trajectory has gradually improved, and the participant plans to improve his future by increasing his income and building a new house to secure his future.

Overall, the participant's life plot line showed an upward trend in general. In the first phase, the participant's life was stable and secure in the family home. His early awareness of the family injustice was a turning point in F.TH.'s life. F.TH. chose to become a firefighter in order to find an income resource so that he could rescue his mother and sisters from the injustice. It seems that there is an incompatibility between the participant's work environment and his character traits, which compounds the stressful nature of his extended-family problems. The traumatic events that F.TH. has experienced, as well as the responsibility he has assumed for his family, increased the likelihood of developing psychological symptoms such as PTSD symptoms. Nevertheless, his narrative described his wife as a source of emotional support, since he got married, and his income as a source of practical support which helped him to recover his life. The coping strategies mentioned by the participant included avoidance and reliance on religion. Accordingly, three main points from the participant's narrative may be highlighted, namely, an early awareness of the suffering of his family due to the family injustice; moral clarity and steadfastness; future growth and fulfilment when he started to study as a part-time student with an upward trajectory to his life plot line. This reflects a redemptive narrative, common among this middle-adult age-group, which has

the function of supporting and justifying a highly generative approach (McAdams, 2006).

### ***5.6 Discussion***

Participants were seriously affected by the traumatic events to which they were exposed in both their personal and working lives. Additional factors that participants emphasised throughout their storytelling included family and education factors. The interaction between the family and education factors might be led the participants to become firefighters in Saudi Arabia. The psychological impact of family life conditions, family responsibilities and obstructed educational trajectories were described, reflecting how the firefighters have been affected, both before and after becoming a firefighter. In addition, the participants' narratives described how they had adapted to the difficult life conditions before and after the job.

In line with most previous studies of life story studies, this study also found evidence for the negative impact of the traumatic events among the participants. The traumatic events narrated included: experiencing the death of a family member or close friend; being physically abused; being injured; witnessing dead bodies. Psychological reactions to these traumas include: nightmares, sleep problems, PTSD symptoms, depression and anxiety (Carey et al., 2011; Chen et al., 2007; Markus Heinrichs et al., 2005).

Previous research has not examined the family living conditions of traumatised firefighters in Saudi Arabia. This study has explored the living conditions of the participants in order to explore the negative and positive

influences of their family backgrounds on the traumatised firefighters. The negative aspects of their family life were found to include: poverty; responsibilities towards the extended family; uneducated parents; and family neglect. Consequently, these negative aspects of family life may compound the firefighters' frustration, depression and other stressful consequences, as has been found by other studies (Al-Garni, 2000; Chaleby, 1986).

Nevertheless, the participants' narratives illustrated a positive aspect to family life, namely, family as a source of support after they became firefighters. Understanding the behaviour of the person is the first step towards being able to help (Hunt. & Mchale, 2010). The emotional and practical support that the firefighters receive from their family members and wives makes it possible for the traumatised firefighters to adapt to the traumatic stress events that they encounter.

With regard to education issues, participants' narratives reflected the strong negative impact that their obstructed educational progress has had on them. Educational difficulties and lost opportunities to continue their higher education are the most common themes across the participants' stories. Some of the participants have had very similar family backgrounds. Commonalities that affected their educational progress at different levels of education included having uneducated parent and having heavy responsibilities associated with their families. This finding is consistent with other research which has highlighted family background and educational attainment (Schütz, Ursprung, & Wößmann, 2008; Woessmann, 2004). The

most common psychological responses to these education-related obstructions included: frustration; violence; antisocial behaviour; alcoholism and substance use. However, some of the participants have resumed their education by studying part-time in order to enhance their chances of promotion, increase their income, or seek another occupation without the hardships and stresses of firefighting. Continuing education reflects a developmental challenge which requires the motivation and enthusiasm to recover themselves, thereby fulfilling a redemptive function (McAdams, 2006).

In terms of coping strategies, this study's results highlighted coping mechanisms mentioned by the participants during their storytelling. Active coping strategies that participants reported using included their religion and the emotional support from their marriage, while passive coping strategies that participants reported using included alcoholism and avoidance. This is consistent with other studies which investigated coping strategies and reactions to intrusive memories that prevent emotional processing of the distressing event, thereby maintaining PTSD symptoms (Clohessy & Ehlers, 1999; Bessel A. van Der Kolk & Fislser, 1995).

In terms of the impact of the interviews, the participants reported feeling comfortable after completing the interview. This feeling is a natural consequence of storytelling because the participants are given the opportunity to explain the events that they have experienced and the decisions they have made. The participants reported a positive change from

being able to explain their feelings as well as re-organising the chaotic nature of their experiences through the stories and events. Some participants found meaning in their traumatic experiences and life organisation chapters. During the interviews, participants talked about important points associated with their traumatic memories which were initially fragmented and disorganised. However, by the end of the interviews, a more coherent, organised, and detailed trauma narrative had emerged. This finding has been reported by previous studies such as (Goncalves et al., 2000; Neuner et al., 2004).

In the narrative analysis, two of the nine cases were selected for more in-depth pictures of the lives of traumatised Saudi firefighters (M.G. and F.TH). In this analysis, the sequences of their life stories were explored. Each life story can be divided into three main phases: a beginning, a middle, and the present. While the participants have each had different backgrounds and life stories, they highlighted the important chapters in their lives which included the life conditions and events that have occurred in their lives. The narrative of both participants reflected a redemptive narrative function, which is consistent with the previous research (McAdams, 2006).

### ***5.7 Building a model of trauma***

According to the findings from both thematic and narrative analyses, two main factors led the participants to become firefighters, namely, their family life circumstances and the issues concerning education. The participants highlighted that the income from the firefighter job is an invaluable source of support, while the support they received from their families after they got

married is an invaluable coping strategy. Figure 5.9 below presents the outcome from both the thematic and narrative analyses.

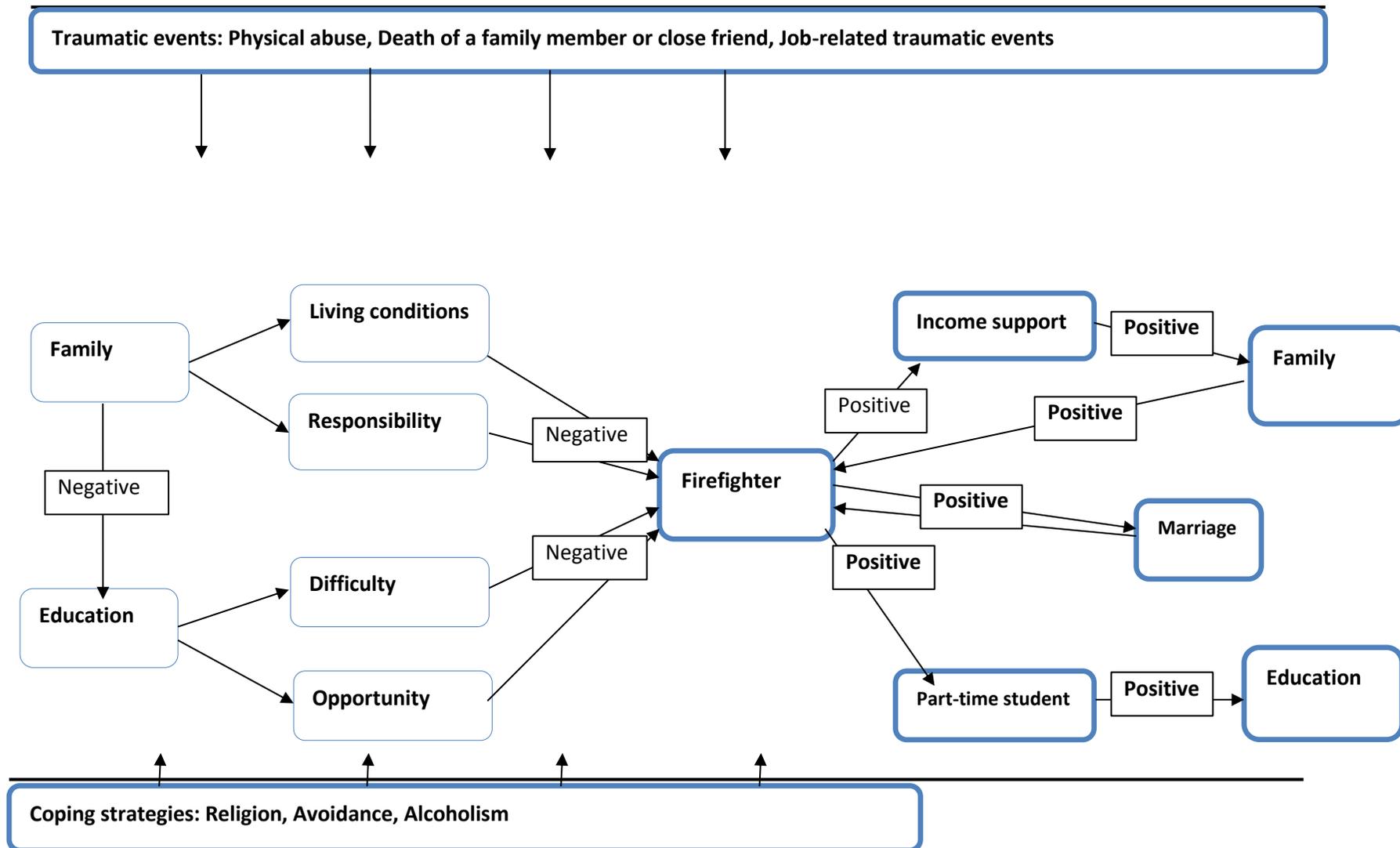


Figure 5.9: Thematic analysis and narrative analysis diagram

The left-hand side of Figure 5.9 depicts the two main factors that were found to lead participants to becoming firefighters in Saudi Arabia: family situation and education. Firstly, the family living conditions and the extended-family responsibilities made it difficult for the participants to grow up unencumbered. Individuals who endured poverty and neglect from their family are more likely to develop psychological disorders. Consequently, their educational progress can be adversely affected, with the participants less likely to achieve a high level of education and develop clear future goals. Furthermore, the participants highlighted several traumatic events associated with both family and education-related issues before they became firefighters. The interaction between their family life and education-related changes affected the participants, leading them to look for any job they could find in order to secure an income source. Thus, all of the participants capitulated to become firefighters without motivation or background knowledge about this type of job, and no one aspired to be a firefighter out of choice.

On the right-hand side of Figure 5.9 are the factors which were found to play a significant role in helping and supporting the participants after becoming firefighters. The participants were still working in a stressful or traumatic environment and so are likely to be exposed to continuing traumatic events. They also discussed some of the traumatic events associated with their firefighter job.

In terms of the family factor, the interaction between the firefighter participants and their extended family is clear from the above diagram. As a result of obtaining a source of income, which got them out of poverty, the firefighters were able to support their extended family, provide for their basic needs, and get married. Conversely, the firefighters derived emotional support from their wives, upon getting married, which helped to buffer them against the stressful job environment and life events.

With regard to the education factor, some of the firefighters are recovering from their poor start in this regard by continuing their education through part-time study at university. Their motivation for resuming their education may be because they are seeking a promotion at work or as a redemptive function: making up for missed or lost opportunities in the past.

Various mechanisms for coping with stress were mentioned during the participants' narrative. The religion and the emotional support provided by marriage were the main coping strategies that were used. Avoidance and alcohol consumption were other strategies used by the firefighters to cope with stressful and traumatic events were some coping strategies more successful than others.

### ***5.8 Limitation***

In the current study, a relatively small sample size was used which makes it difficult to generalise the findings to the wider Saudi firefighter population. Another limitation may associate to the researcher's prior knowledge and

background on the development themes. Because the qualitative study was conducted after the quantitative study in the current research, some themes such as traumatic events and coping strategies were linked to the quantitative study factors. Therefore, themes and sub-themes might be influenced by the research prior knowledge.

### ***5.9 Conclusion***

The purpose of this chapter was to explore traumatised Saudi firefighters' experiences in a chronological order through their life plot line, and highlight the factors which have affected their lives positively or negatively. Family living conditions and family responsibilities affected the educational progress of many of the participants, who subsequently became firefighters as the quickest way of securing an income source. Negative experiences such as traumatic events in their personal and/or career lives, inappropriate family living conditions, and education-related problems had a strong, adverse effect on their lives. On the other hand, participants reported positive circumstances and sources of support such as their religion and social support from family members, which can be considered coping mechanisms. The narrating of their life stories was coherent and clear by the end. The redemptive method during the life line trend highlighted an improvement challenge for the participants' lives.

Individuals reported feeling comfortable after the interviews, which suggest that use of narrative techniques may help to add value to such research as well as provide evidence for the therapeutic benefits of these techniques.

Several studies have used narrative techniques and exam their efficacy with different types of traumatised people, such as war veterans, asylum seekers, and prisoners. The results have found that this technique has superior healing effects to more conventional therapies, such as cognitive-behavioural therapy. The next chapter will examine the effectiveness of the narrative exposure therapy with traumatised Saudi firefighters in reducing their PTSD symptoms.

## **Chapter 6: The effectiveness of Narrative Exposure Therapy (NET) with traumatised firefighters in Saudi Arabia: a randomised controlled trial**

### ***6.1 Introduction***

Chapter 4 presented the high prevalence rates for PTSD symptoms, depression and anxiety among Saudi firefighters, who have limited mental health support in Saudi Arabia. Chapter 5 discussed the life story interview conducted with traumatised Saudi firefighters. The positive and comfortable feelings that individuals reported feeling after the interviews were encouraging for the use of narrative techniques both to contribute to research on narrative techniques and to demonstrate the therapeutic value of such techniques. The aim of the present chapter is to assess the effectiveness of Narrative Exposure Therapy (NET) as a short-term treatment for PTSD symptoms within Saudi firefighters. Previous chapters outlined the mechanisms of and empirical evidence for NET, using different samples. The unique strengths of NET lie in its relatively short treatment time and in its efficiency in treating different types of trauma victims, such as refugees, asylum seekers, earthquake survivors, and survivors of war. The method used in the present study is described in the Chapter 6, Section 6.2, including sample information, data collection procedures, measures, data analyses, the treatment process, and statistical analysis methods. The results of the study are presented in Chapter 6, Section 6.3. Findings are then interpreted and discussed in light of the study aims, literature review, and practical feasibility. The chapter concludes with a summary of the findings, which are considered

in terms of the effectiveness of NET. In this study, (the NET intervention), a Waiting-List Control (WLC) Randomised Controlled Trial (RCT) was conducted. The present chapter examines the effects of NET on PTSD, depression, anxiety, coping strategies, and social support. This is the first study of traumatised firefighters in a developing country that uses a randomised controlled trial for treatment. It is hypothesised that NET will:

1. Significantly decrease symptoms of PTSD, depression and anxiety.
2. Lead to sustainable reductions in PTSD symptoms, depression, and anxiety, as measured at 3- and 6-month follow-ups.

## ***6.2 Methods***

### **6.2.1 Design**

Taking place between December 2012 and August 2013, the study used a Narrative Exposure Therapy (NET) group and a Waiting-List Control (WLC) group with balanced randomisation (1:1). Thirty-four traumatised firefighters were randomly allocated to either the NET condition (n=17) or the waiting-list condition (n=17) by a computer generated list of random numbers. Those in the NET condition received therapy immediately; those in the WLC condition received the same treatment after a three-week waiting period.

### 6.2.2 Participants

Of the 200 firefighters who consented to be assessed in this study, 96 (48%) fully met the DSM-IV criteria for PTSD and 34 (35%) of these consented to participate in the NET intervention (See Figure 6.1 for CONSORT diagram).

Exclusion criteria included the 15 participants who were selected from the 96 firefighters with PTSD and asked to participate in the life story interview (the narrative study) presented in Chapter 5; 30 participants who declined to participate; and 17 participants who were inaccessible. Thirty-four traumatised Saudi firefighters in the west region of Saudi Arabia participated in this study. Firefighters who were aged 19 or above and who fully met the DSM-IV criteria for PTSD were eligible to take part. Table 6.1 shows the socio-demographic characteristics of the participants in both groups in terms of: age, years of service, marital status, level of education, number of traumatic events experienced.

**Table 6.1: Socio-demographic characteristics of participants within the two treatment groups (n=34).**

	NET (n=17)		WLC (n=17)		Analysis	
	N		N		$\chi^2$	$p$
<b>Status</b>						
Single	6		4		0.56	0.45
Married	11		13			
<b>Education</b>						
Undergraduate	4		5			
High school	13		10		2.50	0.28
Secondary school	0		2			
<b>Traumatic events</b>						
One time	0		3		3.36	0.18
2 or 3 times	3		3			
Over 3 times	14		11			
	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>	<b>t</b>	<b>p</b>
<b>Age</b>	28.70	(4.10)	32.2	(6.23)	1.59	0.060
<b>Years of service</b>	7.17	(3.33)	11.	(7.44)	2.34	0.025

**Note:** Secondary school (ages 12–15); high school (15-18) in the KSA the same as secondary school in the UK; undergraduate in the KSA is the same as tertiary education in the UK.

The purpose of this study was described to the participants by the researcher, and the procedure for collecting data was explained. The study was approved by the Research Ethics Committee of the Institute of Work & Health and Organisation (I-WHO) Department at the University of Nottingham, UK.

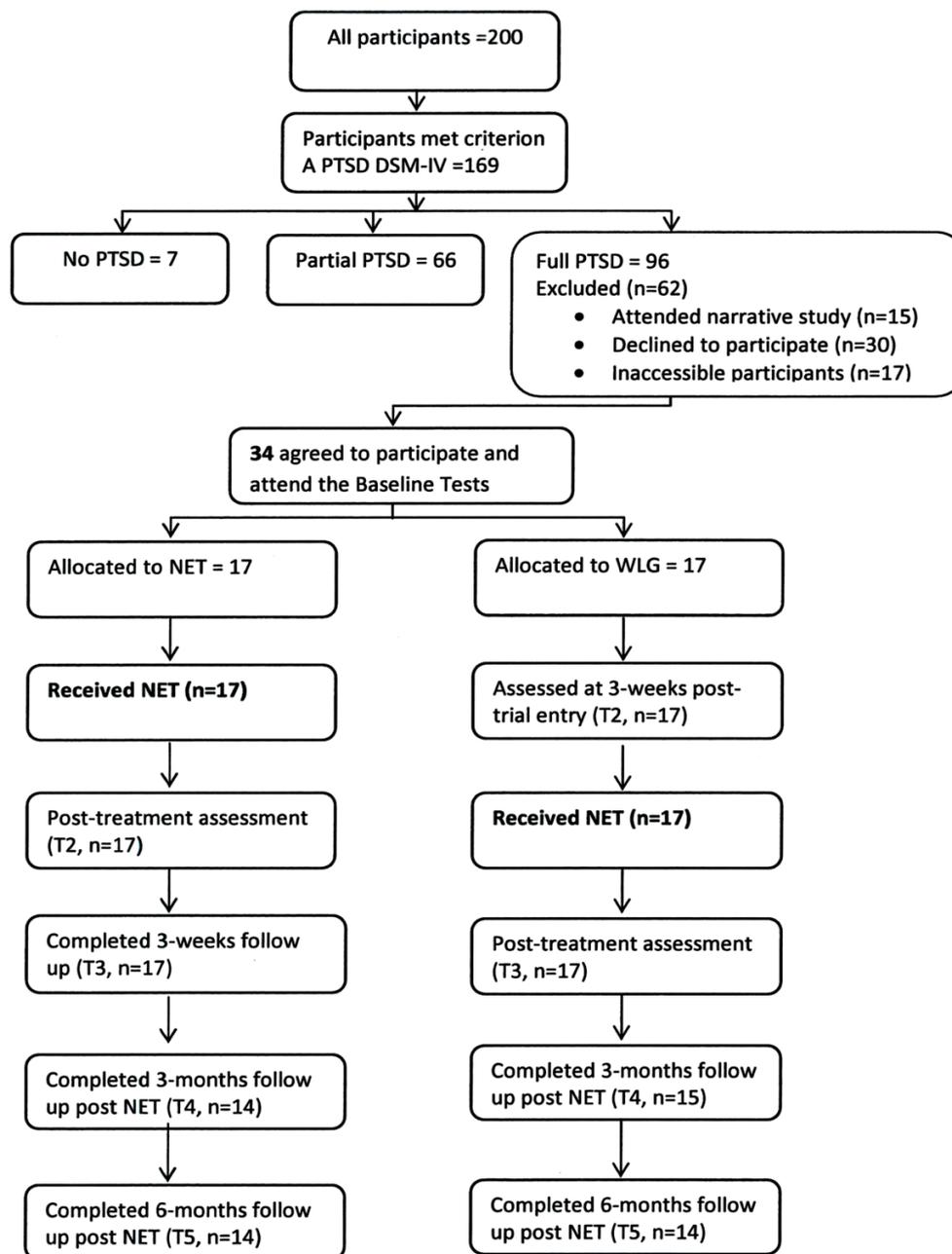
### 6.2.3 Measures

The details and psychometric properties of the measuring instruments were presented in Chapter 2 (p. 101), and are reviewed below.

- The prevalence rate of PTSD symptoms was assessed using the Scale of Post-traumatic Stress Symptoms (SPTSS ) (Carlson, 2001), and the Arabic version was validated by Jaber (2012).
- Depression and anxiety were measured using the Hospital Anxiety and Depression Scale (HADS) (HADS; Zigmond & Snaith, 1983), and the Arabic version was validated by (El-Rufaie. & Absood, 1995).
- Coping strategies were measured using the author Brief COPE scale after validated and assessed the reliability of the Arabic version. This version of the Brief COPE has 19 items measuring two coping strategies: active and passive coping (see Chapter 3 for full details).
- Social Support was assessed using Jaber's (2012) Social Support scale.

#### **6.2.4 Procedure**

The screening assessments were used as the baseline (T1). Those in the NET condition received 4 therapy sessions of 60–90 minutes over 3 weeks, with 2–4 days between each session. They were assessed post-treatment (T2), after another 3 weeks (T3), then after 3 months (T4), and then after 6 months (T5) using the same scales. The WLC group was assessed 3 weeks after trial entry (the waiting period) (T2), then given NET and assessed post-treatment (T3), and again after 3-months (T4) and finally assessed after 6-months (T5). Figure 6.1 presents the research and treatment schedules for both conditions. There was no attrition across T1, T2, and T3, though 5 firefighters withdrew before T4, and 6 firefighters withdrew before T5.



**Figure 6.1; CONSORT diagram showing the flow of participants through each group.**

The process of screening and treatment in both the NET and WLC groups were conducted by the researcher who trained in the use of NET at the Institute of Psychtrauma in London (see Appendices E), based on (Schauer et al., 2011).

Because all the participants were literate, the scales were given to them along with the information sheet and consent form. After they had read the

information sheet and signed the consent form, they commenced the treatment sessions. The follow-ups were carried out by the researcher using online questionnaires, while two participants provided their answers by telephone.

### **6.2.5 Treatment**

The treatment started shortly after the baseline assessment. According to the literature review, it was decided to deliver four NET sessions as most the previous RCT studies used. Four sessions of NET (90 minutes per session) were provided to the 17 participants over a period of three weeks. During these sessions, each participant, assisted by the therapist (myself), provided a detailed autobiography with a special focus on their traumatic experiences. Each session was written and revised in subsequent sessions. The participant was encouraged to relive their trauma-related emotions until habituation was achieved. In the final session, the participant received a written report of his biography.

### **6.2.6 Statistical analysis**

Group differences in demographic data and pre-treatment measures were analysed using chi-square tests for categorical variables and t-tests for continuous variables. Univariate analyses of covariance (ANCOVAs) were used to analyse pre- to post-treatment changes in questionnaire scores, while controlling for pre-treatment scores. ANCOVAs are recommended as a robust and reliable statistical strategy for analysing the results of RCTs (Vickers, 2005a, 2005b). Within-group changes of each group from pre- to post-

treatment were tested using paired t-tests. Due to the small sample size, Hedge's g value was calculated as the effect size for within- and between-group changes (Hedges, 1982). The equation defined as following:

$$g = \frac{\bar{x}_1 - \bar{x}_2}{s^*} \quad s^* = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

The long-term treatment effect was analysed using repeated measures ANOVAs with the pre-test, post-test and follow-up scores of the two groups. Pair-wise differences were measured using paired t-tests with a Bonferroni correction. In the figures, error bars indicate standard error to represent the overall distribution of the data. With regard to the missing values due to the drop-out of participants in T4 and T5 (5 and 6 respectively), discrete missing values in SPSS were used to avoid the estimate which can be severely biased when the ANCOVAs and repeated measures ANOVAs analyses are carried out. To maximise the use of information in this study with a small sample size, missing data were replaced by estimates with a restricted maximum likelihood procedure. However, no significant differences were found before and after replacing the missing data. Therefore, the data have been analysed without replacing missing values. All analyses were performed in SPSS version 20.0.

## **6.3 Results**

### **6.3.1 Treatment adherence**

The number of traumatic events that participants experienced was reported in Table 6.1 as a result of the Firefighters Trauma History Screen (FTHS). In the first NET session, participants reported the traumatic events again after the trauma history screened to draw the life plot line including the traumatic events. This made to distinguish between traumatic events and stressful events. Participants' previously reported traumatic experiences in the firefighter trauma history screen scale included: difficult life conditions, education problems, conflicts with and loss of family members and close friends, terminal disease, accidental injury and death. Participants did not report incidents such as torture or persecution – events described in previous NET studies of refugees (Bichescu et al., 2007; Neuner, Onyut, et al., 2008) . Participants spent no more than one session on narrating previous traumatic events, with 2 to 3 sessions focused on the events associated with their firefighter work. All participants completed the treatment. No major deviation from the study protocol was apparent.

### **6.3.2 Baseline data**

The age range of the sample was 22 to 41 years (mean  $30.4 \pm 5.1$ ). The socio-demographic characteristics of the participants are described in Table 6.1. There were no significant differences between the two groups regarding age, marital status, level of education, and number of traumatic events

experienced. However, there were significant differences in the number of years of service.

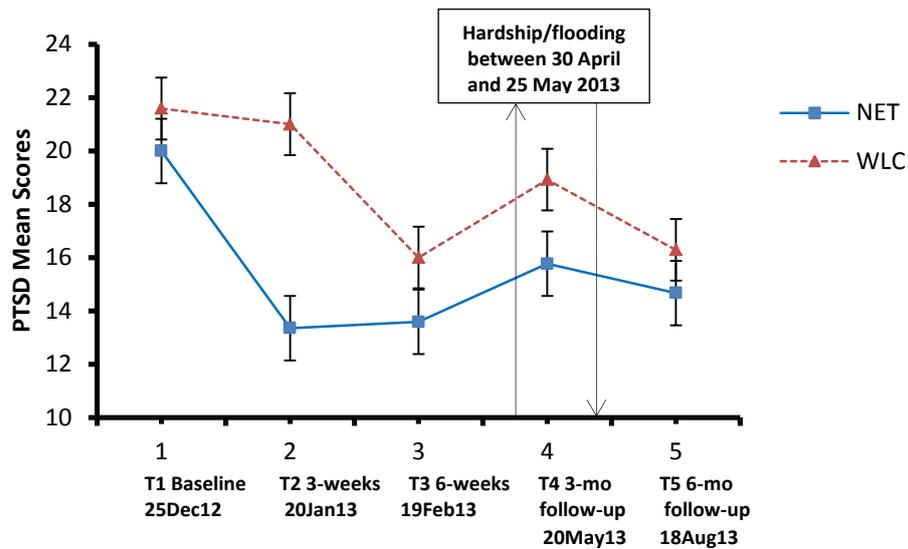
### 6.3.3 Treatment effect

Table 6.2 shows the mean scale scores of both the NET and WLC groups at each time point: T1, T2, T3, T4 and T5. At baseline, T1, there were no significant differences between two groups.

**Table 6.2: Measures over time for treatment (n=17) and waiting-list control (n=17) groups**

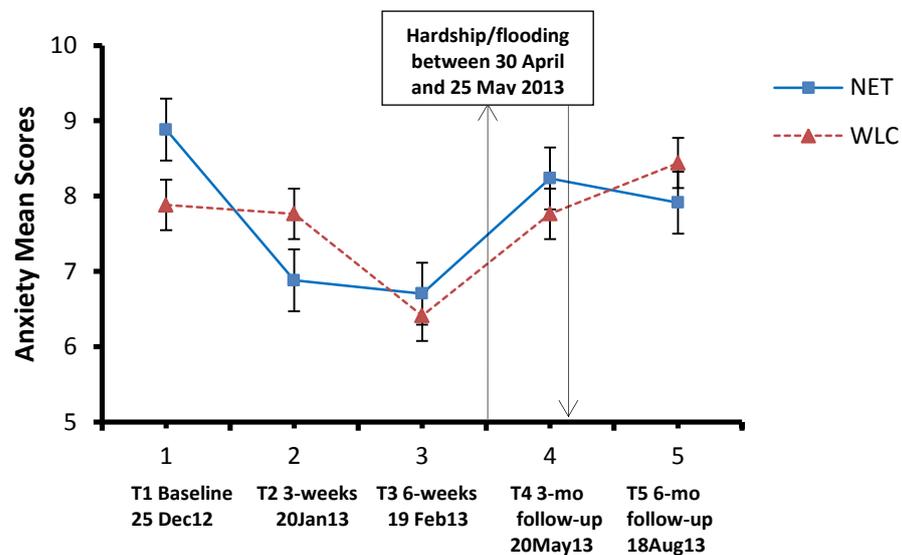
Measures	Groups	T1	T2	T3	T4	T5
		Mean SD				
PTSD	NET	20.00 (9.44)	13.35 (7.62)	13.58 (7.47)	15.42 (10.16)	14.50 (6.24)
	WLC	21.58 (13.31)	21.00 (11.00)	16.94 (10.14)	19.13 (11.71)	16.78 (7.74)
Anxiety	NET	8.88 (3.95)	6.88 (2.75)	6.70 (2.36)	8.28 (1.32)	7.85 (2.87)
	WLC	7.88 (2.44)	7.76 (2.41)	6.41 (2.20)	7.73 (1.38)	8.35 (1.27)
Depression	NET	7.35 (3.51)	5.88 (2.59)	6.23 (2.68)	8.78 (1.62)	8.50 (2.90)
	WLC	8.35 (2.47)	8.41 (1.79)	6.23 (1.67)	10.06 (1.62)	8.85 (2.14)
Active coping	NET	36.29 (7.96)	37.52 (6.56)	39.64 (5.52)	38.00 (7.77)	39.42 (7.59)
	WLC	38.17 (6.27)	40.88 (6.80)	43.00 (5.67)	39.40 (5.91)	41.00 (6.05)
Passive coping	NET	12.88 (2.86)	10.70 (2.71)	10.94 (2.60)	11.14 (2.53)	13.00 (2.47)
	WLC	12.41 (2.71)	11.00 (2.71)	11.35 (2.31)	13.20 (2.54)	13.28 (1.97)
SS Family	NET	19.70 (11.07)	17.88 (8.19)	20.17 (10.69)	21.28 (9.12)	20.64 (10.21)
	WLC	25.35 (7.18)	24.17 (5.92)	26.17 (5.95)	24.00 (6.75)	24.42 (6.25)
SS Friends	NET	15.11 (9.73)	14.00 (7.05)	16.11 (8.35)	17.71 (8.76)	10.71 (9.95)
	WLC	15.52 (7.81)	15.29 (7.71)	16.70 (6.64)	17.00 (7.91)	8.00 (6.40)
SS GO-NGO	NET	2.23 (0.86)	2.64 (3.80)	2.35 (3.14)	3.35 (3.83)	10.57 (9.79)
	WLC	3.58 (1.26)	3.52 (4.09)	3.47 (4.03)	3.46 (3.48)	12.07 (7.04)

**Note:** SS – Social Support; GO-NGO = government and non-government organisations.



**Figure 6.2** shows the PTSD score of the two groups. The WLC group did not undergo NET during the first 3 weeks of the study. At T2, participants in the NET condition had significantly lower self-reported PTSD symptoms than did participants in the WLC group. At T3, after the WLC group had completed the NET treatment, a difference no longer existed between the groups.

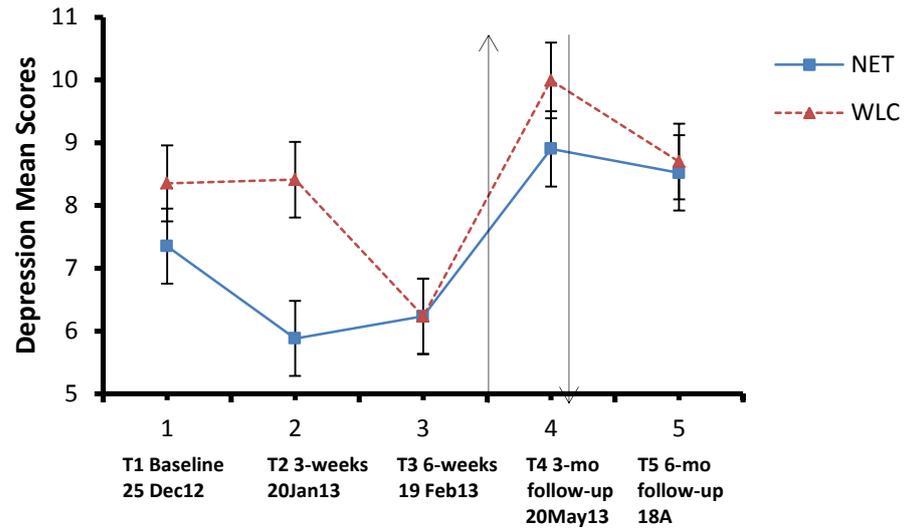
**Figure 6.2: Mean reported PTSD scores for the two groups (n=34)**



**Figure 6.3** shows the mean anxiety scores for the two groups. The WLC group did not undergo NET during the first 3 weeks of the study. At T2, participants in the NET condition had significantly lower self-reported symptoms of depression than did participants in the WLC condition. At T3, after the WLC group had completed the NET treatment, a difference no longer existed between the groups.

**Figure 6.3: Mean reported anxiety score for the two groups (n=34)**

Hardship/flooding  
between 30 April  
and 25 May 2013



**Figure 6.4** shows the mean depression scores for the two groups. The WLC group did not undergo NET during the first 3 weeks of the study. At T2, participants in the NET condition had significantly lower self-reported symptoms of depression than did participants in the WLC condition. At T3, after the WLC group had completed the NET treatment, a difference no longer existed between the groups.

**Figure 6.4: Mean depression score for the two groups (n=34)**

### 6.3.4 Initial treatment outcome

**Table 6.3: Result of outcome measure of T1 and T2: Means difference, 95% CI, paired t-test, within group effect sizes, ANCOVA analysis, and between group effect sizes.**

Measures	Groups	Mean difference (T1-T2)	95% CI	Within-groups		Effect size	Between-groups		Effect Size
				df	t		df	f	
PTSD	NET	6.65	(5.23 to 8.05)	16	10.01***	0.75	1.31	102.5***	2.05
	WLC	.58	(-0.96 to 2.1)	16	0.80	0.04			
Anxiety	NET	2.00	(1.27 to 2.72)	16	5.83***	0.58	1.31	31.42***	1.57
	WLC	.12	(-0.32 to 0.55)	16	0.56	0.04			
Depression	NET	1.47	(0.65 to 2.28)	16	3.82**	0.47	1.31	32.9***	1.15
	WLC	-.06	(-.52 to 0.40)	16	-0.27	0.02			
Active coping	NET	-1.23	(-5.31 to 2.84)	16	-0.64	0.16	1.31	1.54	0.57
	WLC	-2.71	(-3.47 to -1.93)	16	-7.48***	0.41			
Passive coping	NET	2.18	(1.05 to 3.30)	16	4.10***	0.78	1.31	1.29	2.94
	WLC	1.41	(0.78 to 2.04)	16	4.74***	0.52			
SS Family	NET	1.82	(-0.84 to 4.49)	16	1.45	0.18	1.31	4.48*	0.79
	WLC	1.18	(-0.34 to 2.69)	16	1.63	0.17			
SS Friends	NET	1.11	(-0.84 to 3.08)	16	1.20	0.13	1.31	1.61	0.30
	WLC	.23	(-0.29 to 0.76)	16	0.94	0.02			
SS GO-NGO	NET	-.41	(-0.95 to 0.13)	16	-0.159	0.14	1.31	1.34	0.39
	WLC	.06	(-0.58 to 0.70)	16	0.19	0.01			

**Note:** SS – Social Support; GO-NGO = government and non-government organisations.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Table 6.3 presents the initial treatment outcome analyses. Paired t-tests revealed there were no significant within-group changes in the scores for the WLC group across its waiting period. However, there were significant within-group changes in the scores of the NET group with treatment on the following measures: PTSD overall, anxiety and depression.

Univariate ANCOVAs on post-treatment scores controlling for pre-treatment scores revealed significant effects for PTSD, anxiety and depression. Following the treatment at waiting period (T2), there were significant differences between the scores of the NET and WLC groups on PTSD overall, anxiety and depression, and family social support.

Within- and between-group effect sizes for the outcome measures are included in Table 6.3. From pre to post treatment, no large ( $\geq .80$ ) effect sizes were found for the Treatment group, moderate (.50-.79) within-group effects were found on PTSD overall, anxiety, and passive coping strategies, while small (.20-.49) within-group effects were found with depression. On the other hand, large between-group effect sizes were found on PTSD, depression, anxiety, and passive coping, moderate between-group effect sizes were found on the active coping and family social support, and small (.20-.49) between group effect sizes were found on friends and GN-GO social support.

### **6.3.5 Three and six-month follow-up outcome**

For WLC, The scores of T2 were taken as their pre-test baseline because the WLC group received the treatment after T2. Repeated measures ANOVA was used to analyses the pre-post, three month and six month follow-ups scores with the two groups, NET and WLC. Table 3 illustrates the repeated measures ANOVA with four levels of time: pre-treatment (T1 for NET and T2 for WLC), post treatment (T2 for NET and T3 for WLC), at 3 months follow up (T4 for both groups), and at 6 months follow up (T5 for both groups), and treatment

group (NET vs. WLC) as between-subjects variable. The within effect size between the times assessment is also presented.

**Table 6.4: Repeated ANOVA of time (pre-treatment, post-treatment, follow-up1T4, follow up2T5) × group (NET, WLC) with post-hoc Benoferroni tests and the within group effect sizes.**

Measures	Time		Time x group		Pre/post-treatment		Pre/ 3-mo follow-up		Pre/ 6-mo follow-up	
	<i>df</i>	<i>f</i>	<i>df</i>	<i>f</i>	<i>p</i>	effect size	<i>p</i>	effect size	<i>p</i>	effect size
<b>PTSD</b>	2,31	2.43	2,31	0.18	*	0.62	-	0.30	-	0.62
<b>Anxiety</b>	2,31	3.32*	2,31	.33	***	0.57	-	0.06	-	0.08
<b>Depression</b>	2,31	13.92***	2,31	0.54	***	0.71	-	0.62	-	0.24
<b>Active Coping</b>	2,31	0.69	2,31	0.57	-	0.23	-	0.06	-	0.29
<b>Passive Coping</b>	2,31	3.32*	2,31	2.14	*	0.33	-	0.11	-	0.42
<b>SS Family</b>	2,31	0.67*	2,31	0.55	-	0.01	-	0.04	-	0.05
<b>SS Friends</b>	2,31	6.22**	2,31	0.53	-	0.86	-	0.16	-	0.05
<b>SS GO-NGO</b>	2,31	22.19***	2,31	0.21	-	0.04	-	0.11	*	1.26

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

There were significant time effects post-treatment for PTSD overall, the measures of anxiety and depression, and negative coping strategies.

Nevertheless, there were no significant time effects post-treatment for active coping strategies, and all social support sources (family- friends- GO-NGO).

There were no significant time  $\times$  group interaction effects for overall PTSD, HADS, Brief Cope, and social support.

Comparison of pre- and post- treatment showed a significant reduction of scores in overall PTSD ( $P=0.05$ ), anxiety, and depression ( $P=0.001$ ). However, this reduction was not sustained at 3- and 6 month follow-ups. In terms of coping strategies, passive coping strategies reported significant changes in pre- post time ( $P=0.05$ ). These indicated that, for both groups, overall PTSD symptoms (Figure. 2), Anxiety (Figure. 3), Depression and (Figure. 4) all decreased with NET. Perceived social support from family did not change as a result of the treatment. There was a negative significant decrease in depression between post-, 3-, and 6-month follow ups (T4 and T5) ( $P=0.01$ ). Social support received from GO-NGO showed positive significant change between pre-, and 6-month follow ups (T5) ( $P=0.05$ ). Post- and follow up showed negative significant change in depression between post-, 3-month follow up1 T4, and 6-month follow ups (T5) ( $P=0.01$ ). There were also significant changes between post-, and 6-months follow up (T5) in friends, and GO-NGO social support ( $P=0.05$ ).

## **6.4 Discussion**

The results supported the efficacy of NET in treating a sample of traumatized firefighters in Saudi Arabia. Significant benefits were found across a number of psychological variables post intervention immediately. Levels of reported symptoms of PTSD, depression and anxiety were reduced. However, participants reported an increase in the follow up T4. This may be since the heavy rains and floods affected many parts of Saudi Arabia and some dams collapsed. The west of Saudi Arabia was strongly affected, which forced firefighters to work 24 hours sometimes. This happened between April and May 2013, which was between T3 and follow up T5. NET had slight effects on either coping strategies or social support.

Anxiety and depression scores were also significantly reduced with NET post treatment only. According to Bichescu et al. (2007), depression can be reduced as an impact of NET. This may be because the post traumatic symptoms contribute to additional psychological and physical disturbances (Bichescu et al., 2007; Joffe, Brodaty, Luscombe, & Ehrlich, 2003). It shows that NET could decrease comorbid symptoms beyond the core set of PTSD symptoms. Nevertheless, they increased again between T3 and T5 and this might be as a result of the hard work that they reported.

There were positive significant changes in passive coping strategies after using the NET in T2. Lazarus & Folkman (1984) reported that people felt it easier to cope when they were feeling well than otherwise. Moreover, positive beliefs comprised general and specific beliefs that can be a basis of hope. Hope can

sustain coping efforts in dealing with stressful conditions. Hope can be associated with a sense of control, a belief that a particular person (e.g., therapist) or programme (e.g. treatment) is helpful.

The effect size of the treatment on posttraumatic symptoms at post-test (0.75) was higher than the effect sizes (0.60) reported in previous NET studies with traumatized populations (e.g. Neuner et al., 2004). In terms of social support, there was no improvement in perceived social support from family, the social support perceived from GO-NGO showed an improvement, because the participants may accept the NET sessions as a support from a non-government organisation. Then, participants reported an improvement in social support after the follow up time assessment. This also may be because all firefighters in Saudi Arabia received a bonus for their hard work during the time of floods which was government organisation support. Other studies have found that chronic disorders such as PTSD can corrode social support (Bichescu et al., 2005; Joffe et al., 2003). In contrast, it may not be possible to significantly change perceived social support over such a short time, and NET did not specifically address how people can change their social behaviour.

The current study was the first time NET has been applied to traumatised firefighters in Saudi Arabia. Even though the efficacy of NET has already been used across cultures in Europe, Africa and Asia (Bichescu et al., 2007; Neuner, Onyut, et al., 2008; Zang et al., 2013), the psychosocial situation in this study was different from previous studies which have mainly focused on people affected by war, torture, and earthquake survivors. In previous NET studies,

populations had experienced multiple or chronic traumatic events which were over. The participants in the current study were still working in a stressful or traumatic environment and so are likely to be exposed to continuing traumatic events. Further research is required, exploring different types and severity of trauma.

### ***6.5 Limitation***

Despite preliminary evidence that NET is quite effective among Saudi firefighters, there are some limitations to this study that might impact the strength of the conclusions drawn.

The sample size was quite small in this study; all the participants were male, and there was attrition and dropout of the participants in the follow up times T4 and T5. There was also a lack of power analysis of the sample size in the RCT study. However, the accessible numbers of participants in this study was only 34 participants. Therefore, it was not able to conduct the power analysis in this study and this might affect the result. A reason which may prevent individuals with PTSD from participating in this study is the stigmatism issue associated with psychological support in Saudi culture (Saheed Wahass & Gerry Kent, 1997).

Using screening measures such as SPTSS rather than severity measures such as PDS or IES-R to measure clinical change is another limitation. However, the researcher used SPTSS because it was the only Arabic version accessible to measure PTSD. Another limitation is the lack of consideration of the diagnosis status following the NET intervention. This diagnosis possibly reports the

specific changes to PTSD, depression and anxiety following the NET intervention. Moreover, when asking the participants about their experience of the NET sessions this should be conducted qualitatively or quantitatively in order to obtain significant information about their experiences.

Another limitation which could be highlighted in this study is the significant differences between the groups in the years of service; for example, maybe those with more years of service have different coping strategies. Moreover, participants in this study were still working in a stressful environment and were therefore expected to be exposed to more traumatic events. Therefore, NET may work for previous trauma but does not provide the skills to protect against future traumatic events, and the results suggest that only four sessions may not be appropriate. Otherwise, first responders should have a few sessions after three and/or six months followed by an evaluation which can be helpful in reducing the stress symptoms associated with their work environment and/or enhance their coping strategies.

### ***6.5 Conclusion***

In conclusion, NET is an effective treatment for traumatised Saudi firefighters displaying psychological symptoms. It is effective for PTSD symptoms and comorbid symptoms such as anxiety and depression immediately post-intervention, but its effect was not sustained at the 3- and 6-month follow-ups. Even though NET was initially designed for refugees and other victims of war, it might be an effective treatment for a wider range of traumatic and stressful incidents. The results suggest that four sessions may not be enough,

especially in benefitting participants such as firefighters whose work under stressful conditions is ongoing, meaning that they are likely to be exposed further traumatic events during the time of treatment and at the follow-up time. This suggests that, for NET to have a positive impact and reduce trauma symptoms, individuals need sufficient time to be exposed to the traumas, become habituated to them, and process all the relevant information related to their exposure and habituation.

## **Chapter 7: General discussion and conclusion**

### ***7.1 Overview***

The overall purpose of this research was to understand the psychological impact of being a firefighter and develop a narrative intervention for traumatised Saudi firefighters and to examine its efficacy in reducing PTSD symptoms, in this population. The research objectives were to assess the prevalence rate of psychological disorders, namely, PTSD, depression, and anxiety, and determine the types of coping strategies and sources of social support currently used by participants. Life story interviews were conducted to gain a deeper understanding of the background lives of traumatised Saudi firefighters. This included the factors leading them to become firefighters and interacting with their psychological well-being in this context. The findings from the life story interviews were used to inform the narrative intervention study. In order to achieve these aims, a questionnaire study was conducted with 200 Saudi firefighters. In addition, a qualitative study was conducted with 9 Saudi firefighters in the form of semi-structured, individual interviews in order to explore their life story in terms of life chapters and life themes as well as informing the intervention study. The final study implemented a narrative technique termed Narrative Exposure Therapy (NET) in order to bring about therapeutic benefit through reducing PTSD in 34 traumatised Saudi firefighters.

The purpose of this final chapter is to summarise the key findings and discuss the implications of these findings in relation to both the theory and methods of previous studies. The contributions and limitations of this research are then discussed. The chapter concludes by making recommendations for future research.

## ***7.2 Summary of the main findings***

The literature review in Chapter 1 identified distinct gaps within PTSD intervention research and practice. Several important points highlighted the need among Saudi firefighters for psychological support.

First, no psychological trauma care exists for firefighters in Saudi Arabia.

Moreover, no previous studies have investigated the prevalence rate of PTSD for either the general population or for first responders in Saudi Arabia. Most studies on the treatment of PTSD have been conducted in developed countries, although few studies have assessed the efficacy of interventions in these countries. Second, no qualitative research in the field of clinical psychology has been published on mental health problems in Saudi Arabia in terms of religious beliefs and cultural background. Third, therapies such as TF-CBT (trauma-focus cognitive behavioural therapy) and EMDR (Eye Movement Desensitisation and Reprocessing) have been recommended for PTSD symptoms (NICE, 2005), yet these kinds of therapies may not be appropriate for all PTSD populations due to differing cultural frames of references and background knowledge about psychological support (Ratner & El-Badwi,

2011). Other variables that may impede the efficacy of these therapies include: the nature of the work environment, and non-response or dropout rates of participants. (Schottenbauer, Glass, Arnkoff, Tendick, & Gray, 2008). Moreover, CBT may only be effective for certain kinds of people, namely those who are relatively intelligent, motivated, and able to cope with severe emotional trauma (Hunt, 2010:P31). Fourth, the empirical evidence for the efficacy of narrative interventions for reducing PTSD symptoms has been increasing over the last few years. A relatively simple process, NET has a number of benefits. It is cost-effective; it is relatively easy to deliver training; and it can be administered to people of different cultures (Schauer et al., 2011). However, NET has not previously been applied with first responders (Haugen et al., 2012), nor in Saudi Arabia (Harold G Koenig et al., 2014). Fifth, firefighters in Saudi Arabia work under circumstances that are complicated by cultural issues such as the stigmatisation of psychological problems and the lack of psychological support. A psychological intervention that is low-cost, simple, quick and accessible is needed.

These findings and lacunae in the existing body of research provided the background for the empirical studies of the present research, concerned with adapting a narrative intervention for traumatised Saudi firefighters and examining its effectiveness and feasibility within this setting. The discussion in Chapter 2 justified the suitability of using a cross-sectional survey questionnaire, a qualitative life story interview study, and a randomised controlled trial design (RCT) to achieve the research goals.

Chapter 3 reported the development and validation of two scales: the Firefighters Trauma History Screen (FTHS) checklist and the Brief COPE scale. The results support the use of the FTHS checklist with firefighters and other first responders and the use of the Brief COPE scale in Saudi Arabia or other Arabic settings.

Chapter 4 presented the cross-sectional survey questionnaire and discussed the nature and extent of the psychological difficulties experienced by Saudi firefighters. A high prevalence rate was reported for fully PTSD symptoms 57% as well as depression 53.3% and anxiety 44.4%. The types of coping strategies and sources of perceived social support currently used by participants are discussed at the end of this chapter.

In Chapter 5, the life story interview was adapted for traumatised Saudi firefighters and administered in order to understand the life background of this population as well as inform the narrative intervention. The findings revealed hitherto unreported factors that led the participants to become firefighters, including family situation and education-related factors as well as the interaction between these factors. The educational progress has been affected by the family living condition and family responsibility of many of the participants. As a consequence of these conditions, they became firefighters in order to secure an income source. Some factors were consistent with those used in the cross-sectional survey such as coping strategies and social support. These findings contributed rich and extensive insights into the culture background and work constraints of Saudi firefighters such as religion,

extended family and work system and how these may affect the mental health positively and/ or negatively. In addition, the participants' reflection at the end of the life story interviews appeared to more coherence with positive feelings when they reflected the life chapters and events. This delivers anecdotal evidence for the direct, intuitive view of traumatic memory and the psychological advantages of narrative. This finding supported the suggestion of using narrative techniques with this population and the possibility of adding clinical value to research on narrative therapy.

To assess the effectiveness of NET, 34 traumatised Saudi firefighters were randomly allocated to either the NET condition (n=17) or the waiting-list condition (n=17). The results in Chapter 6 showed that NET was effective in reducing PTSD symptoms, depression, and anxiety in traumatised Saudi firefighters in the NET group within the first post-intervention assessment; beyond that, the WLC group also showed symptoms improvement, suggesting that NET has clinical value among this population.

### ***7.3 Discussion of the study findings***

In this section, the results of the cross-sectional study are discussed in terms of the prevalence of traumatic events, PTSD, depression and anxiety symptoms, as well as coping strategies, and social support. Comparisons of these variables in terms of age, years of service, marital status, and level of education are also discussed and presented below. Then, the role of each variable in predicting PTSD is discussed. The results of the narrative study are discussed in terms of the background lives of the traumatised firefighters in

order to gain a deeper understanding of the factors associated with their psychological problems and the interaction between these factors. The positive impact of the life story interviews is discussed in order to inform the intervention study. The focus of the discussion in the present chapter will be to bring together the elements from the previous chapters and to address the effect of traumatic events on Saudi firefighters.

### **7.3.1 Trauma-related symptoms and risk factors**

The results of the cross-sectional study indicated that the majority of firefighters have experienced at least one traumatic event, either affecting them personally or affecting their family members or friends in their normal live and/or in their course of their work. In addition, most of the participants reported having experienced multiple traumas before and/or after they became firefighters. The range of traumatic events that firefighters reported in the quantitative study included: violent events during service in the civil defence sector; car accidents; and the sudden death of close family and friends. A history of trauma could predispose participants into developing PTSD symptoms, while multiple and ongoing traumatic events are likely to contribute to the development of trauma disorder. These findings on the relationship between trauma/multiple trauma and the development of PTSD symptoms are supported by previous studies such as (Breslau et al., 1999; Ford & Courtois, 2009; Graham-Howard, 1993; Bessel A van der Kolk et al., 2009). In addition, the qualitative study, which entailed interviewing traumatised firefighters individually, gave more details about the traumatic

events experienced such as physical abuse, sudden death, injury, and witnessing dead bodies, including the participants' feelings and whether these incidents occurred before or after they became firefighters. Traumatized firefighters reported what their feelings were before, during, and after the events, whether intense fear, helplessness, or horror during the life story interviews. They also reported their thoughts at the time of the traumatic events. These details enabled both the researcher and the participants to distinguish between acute stress disorder and PTSD symptoms and traumatic and stressful events. In a face-to-face interview setting with the researcher, the participants described the events they had experienced. From their sad tone of voice they used and any decision they made in the event time, it was possible to understand their feelings and thoughts. When the participants' traumatic event discussed, the tone of voice became slow and sadness and they tried to hurry through or avoid the emotions associated with the memory. Once the participant's traumatic event has been activated by the life story interview, the current threat is usually accompanied by intrusions and other re-experiencing symptoms, including anxiety, arousal, and other emotional responses. These findings are supported by PTSD theories in terms of the emotional and behavioural responses, such as the theories of (Anke Ehlers & Clark, 2000; Foa & Rothbaum, 1998).

In terms of the prevalence rate of PTSD symptoms, the results indicated that 57% (n=96) fully met DSM-IV (APA, 1994) criteria for PTSD. This is higher than the prevalence rates in previous studies of firefighters in diverse countries

such as Australia (37%) (Bryant. & Harvey., 1995), Canada (17%) and the USA (22%) (Corneil et al., 1999) , Japan (17.7%) (Mitani et al., 2006), Kuwait (18.5%) (Al-Naser & Everly, 1999), and the UK (12%) (Haslam & Mallon, 2003).

The high prevalence of PTSD in the current study may be explained by a number of factors. First, the traumatic events were evaluated by participants using a self-report scale in the cross-sectional study. Participants in this situation have an opportunity to privately report their symptoms.

Consequently, responses on the self-report scale to traumatic events may have affected the PTSD prevalence rate. Therefore, using both quantitative and qualitative data for assessing the traumatic events can enhance the accuracy of the results. Second, the Saudi firefighters were exposed to a wide range of traumatic events as a result of their work environment and locations. A third possible reason for the high prevalence rate of PTSD is the absence of psychological trauma care in Saudi Arabia and the lack of mental health care, as reported by Al-Habeeb and Qureshi (2010). Fourth, the stigmatisation of psychological support in Saudi culture could also ensure that PTSD prevalence rates are high (Saheed Wahass & Gerry Kent, 1997). In addition, participants discussed their experiences of becoming firefighters in Saudi Arabia. Their low level of education and the adversities in their background living conditions, such as poverty and extended family responsibilities, as well as the lack of information about the firefighter's job and work environment, all compelled them to become firefighters. Therefore, they might not be in the right job as far as their aptitudes and personality characteristics are concerned.

It is also important to note that PTSD prevalence rates might differ between studies because they are an artefact of the sample size, the PTSD measures used, and differences in the types of research participant, namely, fire service workers only or a mix of other emergency responders. Whether the study uses qualitative and/or quantitative methods, and a cross-sectional or longitudinal design, may also affect findings about traumatic events or their psychological effects.

The results showed significant differences in overall PTSD score and their clusters (avoidance, arousal, and re-experience) between single and married firefighters. Single firefighters reported higher PTSD scores within their clusters than did married firefighters. This result might be because married firefighters have the support of their spouse which unmarried firefighters do not have. Post-trauma social support is likely to influence subsequent coping strategies and the management of traumatic memories (King, King, Fairbank, Keane, & Adams, 1998). This finding is consistent with Brewin, Andrews, and Valentine (2000) who found that a lack of social support during and after the trauma can be strong risk factor of PTSD. The findings also indicated that married firefighters tended to have more years of service than did single firefighters. The majority of married firefighters had more than five years of experience in the job whereas the single firefighters had less than five years job's experience. Regarding education level, no significant difference was found between education levels and overall PTSD scores, whereas a significant difference between education levels was found in the re-

experience cluster. Those who had a tertiary (undergraduate) level of education reported a higher prevalence of re-experience than did others. A possible reason is that the relatively high level of education of these firefighters is associated with dissatisfaction about their job position or about the very nature of the job. Another reason may be because, as they have worked in this environment for longer than the others, they are likely to be exposed to more traumatic events as a consequence of the years of years. Firefighter' years of service has frequently been found to predict higher distress (Moran & Britton, 1994; Regehr et al., 2003b; Dieter Wagner et al., 1998).

The qualitative study comprising individual interviews with nine traumatised firefighters gave more detailed insights into their PTSD symptoms and how these symptoms developed. They reported multiple traumatic events both at work and in their personal lives, such as death, physical abuse, injuries, and witnessing severely traumatising events as a firefighter. These results affected them both physically and mentally, and consequently the PTSD symptoms that were described in the interviews included nightmares, sleep problems, and avoidance. This finding is aligned with those of previous studies of firefighters with psychological problems resulting from their job (Carey et al., 2011; Chen et al., 2007). These finding emphasised that PTSD symptoms can be reflected through the essential elements of the story such as emotional, cognitive, and behavioural reactions. The participants in this case reported emotional reaction in the voice tone which sadness and tried to avoid

narrating around the event. This finding support clinical research in understanding memory functions and the emotional processing of traumatised people (Joseph & Linley, 2005).

### **7.3.2 Coping strategies**

In terms of coping strategies, two strategies were evaluated in this study: active and passive coping. These two strategies are not the same as in the original Brief COPE scale which was used. In this study, Jaber's (2012) Brief COPE scale was used; this has four subscales and each one assesses one of the following coping strategies: active coping, seeking support, non-problem-focused strategies, and substance use. One item was excluded due to the low Cronbach's alpha score (I've been using alcohol or other drugs to make myself feel better). As a result of using principle components factor analysis, the remaining 19 items were grouped into two strategies, namely active coping and passive coping (for further discussion see *p130*). The results showed a significant difference in passive coping strategies between single and married firefighters whereas no significant difference was found between these two groups regarding active coping strategies. Single firefighters reported a greater use of both passive and active coping than did married firefighters. The result also showed a significant positive correlation between PTSD, anxiety, depression symptoms and passive coping strategies. This consisted with the previous studies which were found that avoidance coping was associated with PTSD symptoms in firefighters (Brown et al., 2002; Chamberlin, 2010). In addition, significant positive association were found

between passive coping strategies with anxiety disorder. This finding is consistent with the previous studies (Holahan, Moos, Holahan, Brennan, & Schutte, 2005; Penland, Masten, Zelhart, Fournet, & Callahan, 2000; Wijndaele et al., 2007). This association may be due to the fact that firefighters show greater levels of psychological distress as a consequence of the job nature. Then, it is possible that some firefighters do not believe they have the resources to sufficiently cope with a stressor, thus they adopt more passive coping strategies. These strategies include self-blame, self-disengagement, and substance use for what happened or doing something to think less about events, e.g. watching TV, reading, daydreaming, sleeping, or drinking. These actions are examples of avoidance behaviours that aim to reduce the emotional distress. The avoidance behaviours are attempts to escape from the distressful feelings (Carver, 1997) rather than behave actively to overcome the symptoms, PTSD may become worse with using these strategies.

Active cope also other strategies which were found significantly negatively correlated with depression symptoms in the current quantitative study. This finding was also highlighted in some previous studies (Penland et al., 2000; Sherbourne, Hays, & Wells, 1995; Wijndaele et al., 2007). Active coping seems to be related with reduced depressive symptoms because this style actively removes or resolves stressors (Carver, Scheier, & Weintraub, 1989). As stressors are removed before they develop into functionally inhibiting stressors, this might decrease stress levels and prevent individuals from

experiencing more severe psychological distress (Antonovsky, 1979).

Firefighters might use the planning and /or religion strategies under stress situation which may increase the likelihood of helping them to remove the stress associated with it. People who use active coping attempt to take actions to deal with traumatic situations and make them better. They also attempt to have a strategy about what to do. These can help them to cope effectively with traumatic stress and their aftermath, and that may lead to a decline in the likelihood of developing PTSD. These strategies can be described as direct actions to deal with the incidents.

In terms of the qualitative study outcome, individuals' narratives alluded to both active and passive coping mechanisms which fit with the quantitative study results with additional details. Active coping strategies that the traumatised firefighters mentioned using included drawing on religion and obtaining emotional support from others, while passive coping included alcoholism and avoidance. Religious coping involves the various ways in which people use their religion and faith to deal with stressful situations.

Interestingly, the findings of the quantitative study are consistent with the findings in the qualitative study in that unmarried firefighters were found to use more passive coping strategies than do married firefighters. Traumatized firefighters mentioned that they relied on alcohol and substance use – both passive coping strategies – before they got married, and turned to religion and obtaining comfort from a significant other – both active coping strategies – after they were married. This might be because single firefighters do not

have a source of emotional support as a consequence of the gender division within Saudi culture. The lack of an intimate relationship between unmarried males and females was found to constitute a psychological vulnerability as it increases the likelihood of developing psychological disorders in Saudi culture. In addition, all the participants were Muslim; and both unmarried and married firefighters reported in both the qualitative and quantitative studies using religion as an active coping mechanism. In fact, participants reported using religion as a first line of coping in order to feel comfortable. Furthermore, because fatalism is part of the Islamic belief system, this viewpoint was adopted for accepting events and dealing with problems, which enabled some participants to cope. These findings about religion-based coping strategies are consistent with the findings of previous studies that people use religious forms of coping during times of emotional stress or psychological discomfort, involving the use of both cognitive or behavioural strategies (Chen & Koenig, 2006; Clifford, 1995). This finding about coping strategies is generally consistent with previous studies which investigated active and passive coping strategies in response to intrusive memories, which prevent emotional processing of the distressing event, thereby maintaining PTSD symptoms (Clohessy & Ehlers, 1999; Hadziosmanovic, 2014). Chen and Koenig (2006) conducted a review of 11 experimental studies to examine the relationship between religion and PTSD. They found that 3 of the 11 studies reported measures of religion to be inversely associated with measures of PTSD, whereas 4 studies showed a positive relationship between religion and PTSD (Chen & Koenig, 2006). Therefore, religion was an important factor implicated

in coping although further studies are needed to establish the precise connection in cross-cultural contexts.

### **7.3.3 Social support**

In terms of social support, the firefighters indicated that they received less social support from their families than they did from friends and government and non-government organisations (GO-NGO), with no significant differences between single and married participants or between different education levels. This finding was against the idea of social support playing a prominent role in eastern cultures in general and in Islamic culture in particular. Family is sacred in Saudi culture and caring for family members is considered an important part of religious obligation. Mental health care also traditionally takes place within this extended family, and such problems are usually kept secret (Qureshi et al., 2013). Thus, we would expect social support from family members in Saudi culture to be more salient than that from friends and GO-NGOs. However, the finding in the current study that familial support was less important might be associated with features of their background culture which make it difficult for someone to discuss their negative feelings with family members, and they therefore keep it secret. These results are consistent with the findings of Jaber (2012) who highlighted the culturally-specific nature of social support associated with the community and the kind of values and traditions that dominate in a culture.

In addition, the results of the life story interviews indicated less support from their families before they became firefighters and more support after becoming firefighters. The firefighters indicated more responsibility associated with their extended families before becoming firefighters, which affected their educational progress. They indicated that, after becoming firefighters, they received practical support from their job in the form of an income, and emotional support from their spouse after they got married. They also supported their extended families.

#### **7.3.4 PTSD comorbidity**

Depression and anxiety symptoms were evaluated in the current study. More participants reported depression symptoms than anxiety symptoms: 53% and 44% respectively (n=200). The high prevalence of depression and anxiety in this study was consistent with previous studies of the firefighters and rescue workers which found that depression and anxiety are the most common psychological disorders (Fullerton et al., 2004; Malek et al., 2009). Another reason might be because the cut-off score of depression was recommended is 6 in the Arabic version that used in the current study (El-Rufaie. & Absood, 1995), which may make it possible for the prevalence of depression to be high in the cross-sectional study results. The results also showed significant differences in these measures between the education levels of firefighters whereas no significant differences found between single and married firefighters. Those with lower levels of education reported higher levels of depression than those with higher levels of education. These findings are

consistent with previous studies regarding the relationship between education and PTSD symptoms (Brewin et al., 2000; Zang et al., 2013).

The qualitative study explored the living conditions of traumatised firefighters in Saudi Arabia in order to understand the psychological impact of their lives both before and after becoming firefighters. The results of the interviews showed that some firefighters came from backgrounds of physical abuse and parental neglect as well as poverty. In addition, these conditions, coupled with their responsibilities towards their extended families, affected their educational progress. Emotions such as frustration, upset, neglect and guilt were reported by the participants. Accordingly, the relatively level of depression may be due to their widespread exposure to traumatic events as a result of their life conditions and work environments. These findings have been supported by previous studies on the impact of family structure and family functions on individuals' well-being in Saudi Arabia (Al-Garni, 2000; Chaleby, 1986).

With regard to the relationship between PTSD and anxiety and depression, the results showed that those firefighters who fully met the criteria for PTSD also reported comorbid depression and anxiety symptoms with high positive correlation. This finding supports those of previous studies of firefighters (Armenian et al., 2002; Chen et al., 2007; Chiu et al., 2011; Kimbrel, 2011). This finding clearly shows that the aftermath of trauma involves not only PTSD symptoms but also disorders such as depression and anxiety. Other studies highlighted and supported the overlapping between PTSD, anxiety and

depression which found in the current study (Brewin et al., 2009; Franklin & Zimmerman, 2001; Southwick et al., 1991). The outcome results of the qualitative study of the traumatised firefighters indicated psychological disorders such as alcohol use and job dissatisfaction. These findings are consistent with those of previous studies examined alcohol use in a samples of firefighters (Carey et al., 2011; Fleming, 2009), and job satisfaction (Beaton & Murphy, 1993; Malek et al., 2009). The firefighters' interviews revealed that they attributed these disorders to the fact that they became firefighters without sufficient background information about the work environment. They also had no aspirations to be a firefighter but rather were simply looking for income support. The shift nature of the work, and the negative impact of this, was also highlighted by some of the firefighters. Shift work that involves night shifts can impact negatively on the psychology and psychophysiology of the individual (Åkerstedt, 1988; Chiu et al., 2011). Therefore, most were dissatisfied with their job and some of them planned to leave their job as soon as they had found another source of income. This is further evidence that PTSD symptoms are comorbid with other disorders such as depression, anxiety, job dissatisfaction, and alcohol use, which may lead to job dissatisfaction and therefore any assessments of trauma-related symptoms should take into consideration these disorders among firefighters and emergency workers.

Due to the cross-sectional nature of this study, where data are collected at one point in time, it is not possible to discern whether the participants of the

current study developed PTSD symptoms first, followed by depression and anxiety, or whether their depression and anxiety led to PTSD. For first responders such as firefighters, this study can provide significant indications of the association between risk factors and PTSD symptoms, particularly in work environments where traumatic events occur on an ongoing basis.

However, a longitudinal study is needed to assess firefighters, starting with their recruitment and following them at the beginning of their job, when they lack experience, and continuing over time, to determine the causal sequence: which symptoms of PTSD, depression, or anxiety appear first after a traumatic experience.

#### ***7.4 The predictive model of PTSD***

The variables that could predict PTSD symptoms among Saudi firefighters were examined. The results showed that three variables could explain 37.3% of the variance of PTSD (Figure 4.1, *p161*). In this model, using only the results of the quantitative study, the following three variables only were found to predict PTSD symptoms among firefighters: anxiety, depression and passive coping strategies. Individuals who experienced higher levels of PTSD symptoms were more likely to have higher anxiety and depression scores as an overlapping between these symptoms, and were more likely to use passive coping strategies such as substance abuse and self-blame. On the other hand, the results of the qualitative analysis (Figure 5.9, *p224*) suggested that the higher level of PTSD symptoms may be attributed to other factors, namely,

the family's living conditions, extended family responsibilities and education-related adversities.

With regard to anxiety, the result of the predictive model of PTSD symptoms in this study are supported by the finding in previous studies which highlighted that the anxiety and depression symptoms are secondary to PTSD symptoms (Engdahl et al., 2014; Franko et al., 2005). Working under stressful environment such as firefighters makes it possible for them to have high level of anxiety. In addition, some studies highlighted that low level of education can be risk factor for PTSD symptoms (Chamberlin, 2010; Fullerton et al., 2004; Zang, 2013) but not anxiety. In this case, low level of education significantly negatively correlated with anxiety, and predicted the anxiety symptoms. Firefighters with low level of education are likely to have high level of anxiety in the work environment. A lower level of educational might be associated with lower resilience, poor coping skills, lower insight and lower self-esteem, which make it difficult for people to recover from trauma. This idea was supported by the finding that people with lower levels of education, and lower income, report less active coping and more passive coping. These findings could be referred to as social causation, according to social causation theory which holds that people who live with high levels of stress, environmental adversity or drawbacks, including low socio-economic status (SES), are more vulnerable to the onset of psychiatric disorders (Bruce P Dohrenwend, 2000; Hobfoll, 2004; Johnson, Cohen, Dohrenwend, Link, & Brook, 1999).

In terms of depression, the results of the predictive model of PTSD symptoms in the current study are consistent with previous studies on predicting PTSD in adults exposed to a variety of traumatic events (Breslau et al., 1991; McFarlane & Papay, 1992; Shalev et al., 1998) and among firefighters (Heinrichs et al., 2005; Meyer et al., 2012; Regehr, Hill, & Glancy, 2000). This finding is also supported by the outcome results of the qualitative study in the current research which highlighted the poor family living conditions and the extensive responsibilities towards extended family. Factors such as frustration and parent neglect as well as sudden stresses during childhood are likely to contribute to the development of trauma disorder. This finding is supported by previous studies on the development of trauma disorders (Kolk et al., 2009), and complex PTSD (Ford & Courtois, 2009).

In terms of years of services, the result showed that years of service was another factor predicted depression symptoms and then likely to develop PTSD symptoms. Several studies showed a significant linear relationship between experience and level of trauma and depression as well as predicting PTSD and comorbidity symptoms such as depression (Corneil et al., 1999; Meyer et al., 2012; Murphy et al., 1994). Firefighters who have more years of experience in firefighters' job are likely to expose more traumatic event as a consequence of the job environment. Then, PTSD and beyond symptoms such as depression and anxiety could increase.

Coping strategies were another factor that predicted PTSD symptoms; passive coping strategies such as behavioural disengagement, self-blame, self-

distraction, substance use were used. These actions are part of avoidance behaviours and used to reduce emotional distress with the aim of escape from the stressful feeling rather than behave actively to overcome the symptoms (Benight & Harper, 2002; Brown et al., 2002), therefore, PTSD symptoms likely to increase with using such strategies. This finding is consistent with the previous studies (Beaton et al., 1999; Meyer et al., 2012).

In the qualitative study, participants highlighted the coping strategies that they used to cope with their PTSD symptoms and other psychological disorders. Active coping, such as religion and emotional support, and passive coping, such as avoidance and alcohol use, appeared to be the most common strategies used by the traumatised Saudi firefighters. These findings are consistent with previous studies on intrusive memories preventing the emotional processing of the distressing event and thereby maintaining PTSD symptoms (Clohessy & Ehlers, 1999; Hadziosmanovic, 2014).

The findings of the qualitative study, comprising individual interviews (Figure 5.9, p224) highlighted the interaction between education and families living conditions. In addition, the traumatic events that were reported during the life story interviews included: physical abuse, death, and traumatic events linked to their job which are likely to develop into and predict PTSD symptoms. This is consistent with previous findings about the association between traumatic events and the possibility of developing PTSD, anxiety and depression symptoms (Copeland et al., 2007; Gershuny et al., 2003). Other negative emotions mentioned by firefighters in the interviews included

neglect, frustration, and job dissatisfaction, which might increase the likelihood of developing depression or other psychological disorders. These findings are supported by previous findings on the association between depression and life conditions (Al-Garni, 2000; Chaleby, 1986). The Saudi firefighters of the present study had grown up in poor living conditions with demanding extended-families responsibilities which affected their education progress. They therefore neglected their education because it was too difficult or they lost the opportunity to complete their education. They then sought a job in order to find a source of income to support themselves and their families. Narratives in the life story interviews reported job dissatisfaction as well as efforts to resume or continue their education. This reflects their enthusiasm for embracing a developmental challenge in order to repair past lacks and losses and recover themselves, thereby serving a redemptive function. This finding is consistent with McAdams's (2006) findings about development challenges. In addition, some firefighters expressed feeling more frustration after they obtained their degree because their position at work had not changed and they were no closer to being promoted. In this case, the level of education might lead firefighters to experience their job position as more stressful, because of the expansion of their knowledge.

### ***7.5 Traumatized firefighters***

The narrative study highlighted several points which arose from the cross-sectional study outcomes and the purpose of this research. The results of the thematic analysis identified a number of new factors which played a

significant role in prompting the participants to become firefighters in Saudi Arabia. The first factor is family living conditions. Participants reported poor living conditions including extensive responsibilities associated with their extended families. They also reported parental neglect, physical abuse, and traumatic events as well as poverty. Consequently, their educational progress was adversely affected; this was the second factor after the education factor identified in the qualitative study. Participants faced numerous challenges associated with their futures and their families. For many, they conceded to become firefighters in order to secure a source of income, although they had little awareness of what the job entailed and had psychological problems inherited from the cultural context.

Due to the nature of the firefighter's work environment, the firefighters experience multiple traumatic events on an ongoing basis. The participants discussed both the active and passive strategies that they used to cope. Even though alcohol consumption and drug use are banned by the Saudi government system, participants reported using both alcohol and drugs to cope with mental health problems. Furthermore, religion was used as an active coping strategy. Participants highlighted that culture issues had various adverse effects on them. Seeking psychological support tends to be stigmatised within Saudi culture and religion tends to be used as an alternative psychological support system. Some people in Saudi Arabia still believe that mental health problems are associated with magic, evil spirits, the effects of the evil eye, and sometimes punishment from God. These

findings are consistent with previous studies associated with religion-based coping strategies (Pridmore & Pasha, 2004; Saeed Wahass & Gerry Kent, 1997). On the other hand, family is sacred in Saudi culture and caring for family members is considered an important part of one's religious obligation. Children are expected to stay with their family until they get married while elderly members are cared for within the family unit rather than sent to a nursing home. Moreover, mental health problems must be taken care of within this extended family, and such problems are usually kept secret. Participants reported assuming heavy responsibilities for their extended families and highlighted that mental health problems receive 'cultural' care only. This treatment in Saudi culture of mental health issues is consistent with that found in previous studies, such as Qureshi, Al-Habeeb, and Koenig (2013).

The participants' narratives explained their work circumstances including their shift work and the traumatic events that they had experienced, as well as the lack of psychological support received. On the other hand, they also reported that having a source of income had changed their lives and those of their extended families for the better, while married participants reported receiving emotional support from their family. Some participants had resumed their education by studying part-time at university, which they found had a redemptive function in terms of making up for lost educational opportunities. Resuming their studies was also a way of dealing with their job dissatisfaction and/or seeking promotion within the job. This finding about

the redemptive function of resuming their education is supported by previous studies, such as McAdams (2006).

A significant reason for conducting the qualitative study was to inform the intervention study. Due to the disorganised and fragmented nature of their traumatic memories, the participants found it difficult to create a life story. The traumatised firefighter's narratives highlighted these problems since they reported comfortable feelings at the end of the interviews. These positive feelings after the interviews can be attributed to the process of story-telling and explaining the events experienced together with the decisions that they have made. At the beginning, they were unable to begin their story, and they were jumping from one idea to another until they got support from the researcher. They were asked about their feelings and thoughts associated with the events that they described. At the end, they were asked about their life themes. They reflected on the meaning of their traumatic experiences and re-organised their life story chapters. These findings are consistent with previous studies (Burnell., Coleman, & Hunt, 2006; Burnell. et al., 2010).

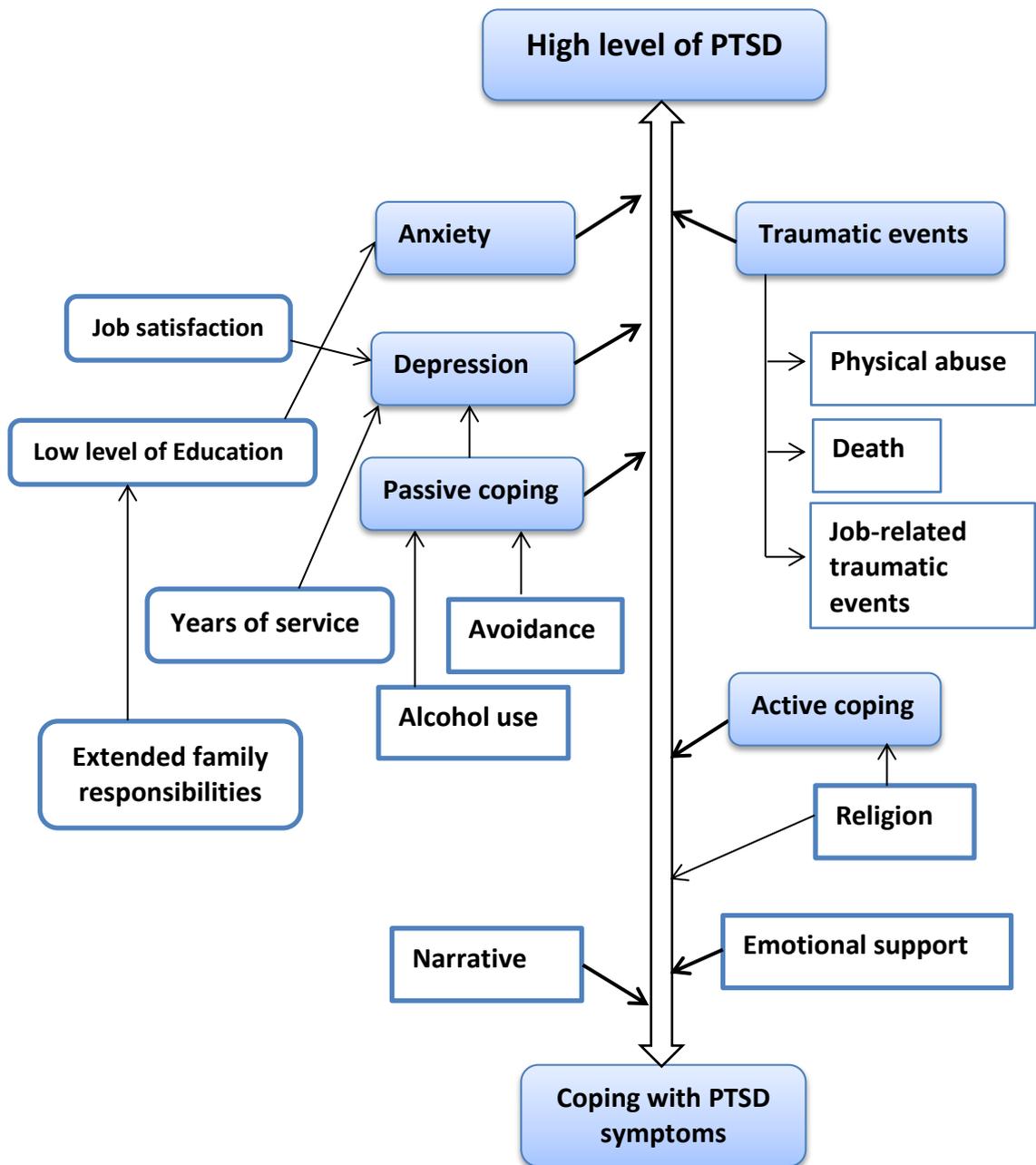
In accordance with Saudi culture, individuals tend to inhibit their feelings, particularly sad feelings. This might be associated with religion because they believe that almighty God (Allah) is able and sufficiently good to support them beyond their imagination, and this gives them immunity against despair, dissatisfaction, sadness and so on (Yousofi, 2011). Moreover, civil defence is under the Ministry of Interior in Saudi Arabia government. This means that firefighters who suffer from mental health issues might be excluded from

service and loses their job. However, the qualitative study enabled exploration of the traumatised firefighters feelings and finding meaning in their thoughts as well as assessing their traumatised memories. Their perceptions of the impact of the interview also informed the narrative intervention support study.

The data from both the qualitative and quantitative studies provided valuable information about the psychological status and nature of the traumatic memories of Saudi firefighters. The findings also identified the importance of providing to first responders mental health relief services which are aligned with Saudi culture.

### ***7.6 Theoretical model***

The findings described above from both the quantitative and quantitative analyses can be incorporated into a parsimonious theoretical model. Shown in Figure 7.1, this model incorporates all those factors that were found to inform the rate of PTSD, anxiety and depression symptoms among Saudi firefighters, as well as the coping strategies that they use to manage the symptoms.



*Figure 7.1 Theoretical model for identifying effective ways of reducing the PTSD or other symptoms suffered by Saudi firefighters and improving their coping strategies*

The model depicted in Figure 7.1 proposes that the following factors play a significant role in the development of PTSD symptoms among Saudi firefighters: anxiety, depression, passive coping strategies (avoidance, and alcohol use), traumatic events, low level of education, years of service, and being unmarried. On the other hand, factors that were used to reduce or cope with the PTSD symptoms included: active coping religion, emotional support, and narrative.

This suggests that these factors concerning firefighters in Saudi Arabia warrant further consideration. In addition, Saudi culture and religion were found to play a significant role in constituting the identity of firefighters as a Saudi people. Whereas the present study addressed a narrative intervention for traumatised Saudi firefighters as a consequence of the positive impact of the narrative reported by the participants in the life story interviews at the end, future research should explore family and familial relationships in Saudi Arabia in terms of Islamic religious obligation and cultural background.

In light of the above findings, NET is an appropriate treatment for traumatised Saudi firefighters because the participants reported positive feelings at the end of the life story interviews. In addition, NET has an affective in different cultures and is therefore culturally acceptable in Saudi Arabia. Since story-telling is common to numerous cultures (Schauer et al., 2011), this is a way of avoiding the stigma associated with seeking psychological support in Saudi culture. Thirty-four firefighters participated in the RCT study. The effect of NET was reported in Chapter 6. The outcome results showed that NET was an

effective treatment for traumatised Saudi firefighters in reducing PTSD, depression and anxiety symptoms. The advantages of NET are clear and consistent with previous studies which also found that NET was an effective treatment (Bichescu et al., 2007; Hadziosmanovic, 2014; Halvorsen & Stenmark, 2010; Neuner, Onyut, et al., 2008; Zang et al., 2013). However, the results were not sustained at the 3- and 6 month follow-ups, at which PTSD symptoms showed a slight increase and both depression and anxiety showed a sharp increase. This may have occurred due to the exacerbation of their firefighters' work, following the heavy rains and floods between April and May 2013, which fell between the T3 and follow-up1 T4. This problem affected Makkah province and many other parts of Saudi Arabia. The west of Saudi Arabia was affected particularly strongly which forced firefighters to work 24-hour shifts sometimes. Between T4 and T5, the firefighters' PTSD symptoms and both depression and anxiety started to decrease but not significantly. This may be due to the financial support given to all firefighters in Saudi Arabia by the Saudi government for their hard work during this time, which constitutes a form of government organisation support. This finding is consistent with the findings of previous studies which discussed support from government institutions (Bichescu et al., 2005; Joffe et al., 2003).

In terms of coping strategies, significant changes were reported by the participants in both passive and active coping strategies after using NET at different post-intervention times. Previous studies of NET have generally been conducted post-event whereas in the current study the firefighters are

enduring ongoing events. This result is supported by previous studies such as Lazarus and Folkman (1984) and (Zang et al., 2013) which reported that people feel more able to cope when they are feeling well than when they are not feeling well.

Overall, the life story interviews supported the use of narrative exposure therapy as a relatively quick and effective treatment in context of first responders in developing countries. To summarise the research findings, these results are discussed in relation to their theoretical and methodological implications in the following sections.

## ***7.7 Theoretical foundations***

### **7.7.1 Theoretical foundations and explanations for the effectiveness of narrative interventions**

NET includes some of the components of other evidence based therapeutic methods such as prolonged exposure and trauma-focus cognitive behaviour therapy (TFCBT). Nevertheless, as a result of the unique technique of exposure and narration of the traumatic memories in NET, the traumatic experiences become embedded within the autobiographical context. The evidence for the effectiveness of NET in this study is supported by the theoretical models and mechanisms underlying NET. The development of NET was informed by a theoretical understanding of autobiographical memory (Martin A Conway & Christopher W Pleydell-Pearce, 2000). The NET framework provides a means of understanding intrusive symptoms in

previous theories in details (Brewin et al., 1996; Anke Ehlers & Clark, 2000), as well as neural fear and how this networks can be triggered in the brain (Foa & Rothbaum, 1998). The effects of NET justified the theoretical foundation of emotional habituation caused by exposure to the traumatic memory (Foa & Rothbaum, 1998). Activation of the fear structures through exposure to the feared stimuli is indicated by high initial levels of emotional arousal. By providing corrective information about the stimuli, responses, and their meanings, the trauma sufferers habituate to the stimuli between sessions. In addition, the result supports the efficiency of the narrative approach for treating distortions of the explicit autobiographic memory about traumatic events, such as memory disorganisation, fragmentation, avoidance of thoughts, and trauma reminders (Ehlers & Clark, 2000). Moreover, throughout this research, the distinction was sustained between declarative 'cold' memory, which includes information about one's life, and non-declarative 'hot' memory, which contains sensory information in detail as well as cognitive and emotional perceptions. This distinction was proposed in the theory of dual representation memory (Brewin et al., 2010).

The effects of NET on PTSD, depression, anxiety symptoms were of a medium magnitude, which means that NET has some clinical value, particularly considering that the intervention was comprised of only four sessions, and the sample was highly traumatised and exposed to multiple, ongoing traumatic events.

Nevertheless, in the current study the narrative therapy was effective within the first three weeks only; beyond that, the WLC group also showed symptom improvement. Its effectiveness therefore had some limitations. One reason may be that four sessions is insufficient for a long-term positive impact and reduction in trauma symptoms for firefighters. The typical number of sessions for NET is ten rather than four. Four sessions might not give firefighters sufficient time to process all the relevant information, and they therefore reported an increase in PTSD, depression and anxiety symptoms in the follow-up time.

### **7.7.2 The diagnosis of PTSD**

In the current study, the cross-sectional study in Chapter 4 demonstrated a high prevalence rate of PTSD symptoms, as well as depression and anxiety, among Saudi firefighters. In addition, the NET study results of Chapter 6 showed that the treatment had an effect not only on PTSD but also on depression and anxiety. This result relates to criticism about the diagnosis of PTSD symptoms overlapping with other disorders, as argued by Brewin et al. (2009) and found in a recent study by (Zang et al., 2013). Researchers have pointed out some items on the PTSD diagnosis scale from the DSM-IV which are unclear (Brewin et al., 2009). For instance, symptom B1 (recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions) refers to any type of intrusive memory, image, or thought, a symptom which is common to many psychiatric disorders. Patients who ruminate in the absence of any intensive memories would then qualify for

criterion B in DSM-IV, even though most clinicians would regard this as more characteristic of depression than PTSD symptoms. Some symptoms such as sleeplessness and irritability are found in both depression and anxiety disorders which can also be accompanied by an exaggerated startle response. This lack is of specific concern because the diagnosis of PTSD can lead to many different combinations of symptoms. Furthermore, previous studies highlighted four factor model of PTSD (Andrews, Shevlin, Troop, & Joseph, 2004; Palmieri, Weathers, Difede, & King, 2007; Simms, Watson, & Doebbellig, 2002). Based on empirical evidence, some symptoms in the re-experience cluster, such as flashback and traumatic nightmares, seem to be distinctive to PTSD, and should be better clarified in the DSM-5 (Brewin et al., 2009).

In addition, NET as a short-term treatment was developed specifically to treat PTSD symptoms. The results of the narrative study support the idea of the symptomatic overlap between PTSD and depression and anxiety symptoms in diverse cultures with different populations. For instance, Zang et al. (2013) examined the effectiveness of NET in reducing the PTSD symptoms of adult survivors of an earthquake in China. Significant effects were found not only for PTSD symptoms but also for depression and anxiety symptoms. Similarly, Hadziosmanovic (2014) investigated Bosnian survivors of war and observed a reduction in PTSD, depression, and anxiety after two weeks. In Germany, NET reduced the PTSD and depression symptoms of refugees (Adenauer et al., 2011). In Romania, NET significantly reduced both PTSD and depression

symptoms among victims of political detention and torture (Bichescu et al., 2007). In the current study, PTSD, depression, and anxiety were reduced by using NET; however the same disorders increased after three months.

The symptomatic overlap with other disorders might impede research concerning the fundamental processes of PTSD and could obscure links between psychology and biology of emotion. It might also provide a false impression of the degree of comorbidity related to the disorders.

Overall, the criteria for diagnosing PTSD in the DSM-IV have limitations. Future studies, whether qualitative or quantitative, need to take into consideration the new PTSD diagnosis as stipulated in the latest version of the DSM-5 (2013), in order to obtain accurate data. Compared to DSM-IV, the diagnostic criteria for DSM-5 draw a clearer line when detailing what constitutes a traumatic event. For instance, frequent exposure that could apply to police officers or first responders such as firefighters. DSM-5 also pays more attention to the behavioural symptoms that accompany PTSD and proposes four distinct diagnostic clusters rather than three. They are described as re-experiencing, avoidance, negative cognitions and mood, and arousal (APA, 2013).

Furthermore, more attention about NET for reducing PTSD, depression, and anxiety should be considered in future intervention studies, aligned with the new DSM-5 criteria of PTSD symptoms.

## ***7.8 Methodological findings***

Five self-report scales were used to achieve the aims of the quantitative study. Two scales were developed and/ or validated, namely: the Firefighter Trauma History Screen (FTHS) and the Brief COPE scale. The FTHS checklist contained 15 events and was developed to assess the trauma history of firefighters. The FTHS was based on criteria A1 and A2 of the DSM-IV. This checklist was developed to measure traumatic events experienced by Saudi firefighters as part of their job or as part of their personal lives in this area (Makkah province) of Saudi Arabia. This scale could be used in future studies of first responders in Saudi Arabia.

Jaber's (2012) Brief COPE scale has been used and validated in this study. The new Arabic version has 19 items in two factors, namely, active and passive coping. This scale has been validated by a group of researchers at Nottingham University, UK, that sought to evaluate the Brief COPE scale across different cultures, languages, and countries, determining its underlying structure. Consequently, the validation of the Brief COPE scale in the present study contributed to this going research. The final Brief COPE scale may provide a clear picture of the coping strategies which people use to deal with traumatic experiences (for full details see Chapter 3). The Arabic versions of the other three scales – Scale of Post-traumatic Stress Symptoms (SPTSS), the Hospital Anxiety and Depression Scale (HADS), and the Social Support scales – were also validated and their reliability assessed.

Using self-report scales was acceptable for collecting data in the current study as the participants were all literate. The scales also offered participants an opportunity to report their symptoms privately. These data may be subject to either over-estimation or under-estimation which could be that the presence of the evaluator would make participants less likely to express their true thoughts, due to social desirability effects.

For the qualitative study, the semi-structured life story interview was adapted. Aligned with the lack of qualitative studies in clinical psychology in the Saudi context, the life story interview had not previously been used in Arabic studies. Therefore, McAdams's (2008) life story interview was adapted for the aims of this study, which were to inform the narrative intervention in terms of Saudi culture and language as well as to enhance research methods in this field. Once the interview guide was developed, the interview was piloted in order to adapt it the Arabic language and culture and the study's aims. A few changes were made to the language of the questions in order to make it clear and acceptable to the participants (for full details see Chapter 5). However, because the results were heavily dependent upon the accuracy of participants' memories and their recounting of past events, some memories might be have been mixed with stories they heard from others which they had integrated into their own autobiographies (Hadziosmanovic, 2014). This issue is common in research that relies on reflective reports of historical incidents. The findings highlighted the significance of using mixed methods because the qualitative study was necessary to extract further details about the

participants. For instance, some participants found it difficult to distinguish between traumatic and stressful events in the self-report scale, whereas in the interviews, it was possible for the researcher to focus on the traumatic events in detail including the participants' feelings and thoughts before, during, and after the event.

### ***7.9 Implications***

This research has several implications, from a practical point of view. The purpose of conducting the life story interview was to assess the firefighters' traumatic memories and to inform the intervention study. However, during the interview process, participants discussed their reasons for becoming firefighters and aspects of their job which provided important insights into the lives of firefighters in Saudi Arabia. With regard to their life before becoming firefighters, participants reported factors pertaining to their family life such as living conditions and the responsibilities that they assumed towards their extended families. They also described the negative impact of these factors on their educational progress and how they lost opportunities to pursue higher education. Consequently, they became firefighters without sufficient motivation, aptitude and background information about the work environment. In terms of the firefighter's job, participants' narratives indicated job dissatisfaction which they linked to the stressful work environment, the shift nature of their work and their demanding work hours. Therefore, discussion regarding these issues in data collection should be considered in further studies associated with the first responders.

In addition, there is a dearth of qualitative research methods in Saudi settings. An implication is that researchers need urgently to identify ways of contributing to and promoting positive mental health and psychological well-being in the Saudi workplace through conducting more qualitative research. Moreover, exploring traumatic memory using the life story interview has not previously been applied to the Saudi context. These contributions can not only enhance research methods but also support clinical researchers in understanding memory functions and the emotional processing of traumatised people in Saudi Arabia.

Saudi firefighters have received no psychosocial support or psychological trauma care from their institutions. These problems are associated with the lack of mental health care in Saudi Arabia, where it is a cultural expectation that religion is the best method of coping. Thus, the mental health of Saudi firefighters should be assessed before they start the job and then supported by Saudi Arabian Mental and Social Health (SAMSH) during their work.

Even though the treatment entails exposure to traumatic memories, dropout rates tend to be low, suggesting that NET has a high tolerability in different cultures (Zang et al., 2013). This might be because story narrating is common to many cultures (Schauer et al., 2011). Because NET has been shown to be an effective treatment in this study as well as in previous studies, it can be used as part of a psychological treatment package in which other approaches are combined such as guided narrative techniques (GNT) and writing intervention

(WI). The findings during the narrative intervention process of this study which can be used to guide further therapeutic work.

The reduction of psychological symptoms after the NET treatment might contribute a new perspective to existing psychotherapies in practice.

Individual narratives reflect the disrupted traumatic memory, and the human desire for meaning through the construction, deconstruction, and reconstruction of narratives. Post-traumatic narrative enables an improvement of the individual's well-being by supporting post-traumatic coping, resilience, and repair. Such processes could be widely enhanced in clinical practice, for example, providing instructions for people to think positively. Encouraging participants to think about any good aspects that might have come out of their experiences may be make it possible for them to change the way they perceive their memories of the experience. Therefore, helping participants in clinical practice to focus on the positive features can be a way of supporting them to effect positive changes in their narratives.

The findings of both the quantitative and qualitative studies indicated that the most salient method of coping was a reliance on religion, which is an important feature of Saudi identity. Understanding the significance of religion in Saudi culture may enable a better understanding of the ways in which they perceive their memories of the experience. Future research in Saudi Arabia or other Arabic countries should consider developing a religious coping scale and using this scale in parallel with the Brief COPE scale, which may provide a deeper understanding of their coping strategies.

### ***7.10 Limitations***

Although the current study provides useful insights into the lives, experiences and mental processes of Saudi firefighters, it is not without some limitations.

With regard to the methodological implications of the Randomised Controlled Trial (RCT), the current study tried to meet all the standard criteria of treatment outcome studies of PTSD symptoms, as reported by Foa and Meadows (1997). These criteria were as follows: (1) have clearly defined target symptoms, (2) use reliable and valid measures, (3) blind evaluators, (4) trained assessors, (5) manualised, replicable and specific treatment programmes, (6) unbiased assignment to treatment conditions, and (7) significant treatment adherence.

However, this study was conducted by a single researcher only which mean that the same person was the evaluator were the outcome measures completed blind and the treatment provider. This might have introduced bias.

With regard to the assessment, self-report scales were used to assess PTSD symptoms and other psychological disorders. This may have affected the psychological well-being of participants, and affected the participants recruited in the cross-sectional study during the time of assessment. Various factors made it impossible to conduct interview assessments for PTSD such as CAPS scale (Clinician-Administered PTSD Scale). It was not possible to find a psychiatrist to diagnose some of the participants to check criterion validity.

There were also time constraints for travelling and conducting the research. In terms of NET, the researcher provided the narrative treatment to both groups

due to the non-psychological trauma care used by this technique in Saudi Arabia and the limited time was available to conduct the RCT. A finding of this study was the significant difference between the groups in the years of service which may be possible that those with more years have different coping strategies. However, years of service variable has been controlled by using the ANCOVA statistical analysis method and the result was significant for pre to post treatment. In addition, all the participants in this study were male, and there was some attrition of participants at the follow-up times. Moreover, participants were still working in a stressful or traumatic environment and so were likely to be exposed to continuing traumatic events. This re-exposure could blunt the effect of prior treatment as well as complicate long-term follow-up results. It could affect the significance of the results and there is a potential bias regarding the aforementioned limitations.

Three participants preferred to hold the NET sessions at the fire station due to the far distance from their home towns and other after-work responsibilities. The fire station provided a private room for the sessions. This might have contributed to an uncomfortable atmosphere for the sessions because they were in the same stressful environment in which they work and were wearing firefighter's clothing. In one session, the alarm sounded in the fire station, and the participants left immediately. The session was rescheduled with the participant. This might have affected the results.

The follow-ups were conducted by the researcher using an online questionnaire. Two participants responded to the follow-up questionnaires by

telephone. The assessment format might affect the responses in that participants might fail to express their true thoughts or feelings without a response of the evaluator (Zang, 2013). Delivering psychological care and support via telephone is a new approach that can be used with large samples (Salisbury et al., 2014), however, it could be associated with slightly lower patient satisfaction.

I found that the process of translating the narratives from Arabic qualitative data into fluent English was not always straightforward. The challenge was to balance readability with retaining the original meaning or word order. As the main purpose of the qualitative research was to understand human behaviour within the context in which it occurs and the meaning that people ascribe to specific circumstances, future analyses of the narratives should be conducted in the original language (in this case, Arabic) to reduce the loss of meaning during the translation. Generally, it is critical that the interpretation of the results and reporting are translated accurately in order to correctly convey the exact meaning of the participants' experiences. In the present study, the quality of the translation in the qualitative research could have been improved by having several translators, at least one of which is a native speaker of each language, who work together, discussing the meaning of the phrases and how they are best expressed. Otherwise, a new system should be developed to help the researcher to improve the quality of the process of translation in the qualitative research. This method should be used by

universities research centres, particularly those that have researchers from different countries, and of diverse languages and cultural backgrounds.

Due to restrictions on the amount of time I was able to spend in Saudi Arabia – two months in total – participants received only four NET sessions each in each of the study conditions. This number of sessions might be not sufficient for participants such as firefighters who continue to be exposure to traumatic events in the course of their work. It would be preferable for firefighters to receive two or three NET sessions after a 6-month follow-up and evaluate the outcome after these sessions. This might contribute to a significant reduction in symptoms as well enhance the coping strategies used by the firefighters.

The purpose of the quantitative data was to assess the effects of the NET intervention. To explore the mechanisms and effective elements of the treatment, in-depth further qualitative analysis of the written report should be conducted.

The prevalence rate of psychological morbidity of the firefighters could not be estimated through the cross-sectional study due to the small sample size (N=200). However, as this study did not serve an epidemiological aim, the sample size is sufficient for obtaining important information about the psychological status of the participants.

The results of this study were based on data collected from Saudi firefighters as first responders. As they have been validated, the scales used in this study

can be used to conduct further research in the field of traumatic stress either in Saudi Arabia or in any Arabic-speaking population.

### ***7.11 Contributions***

The current research has explored and developed a simple, efficient, and practical psychological intervention for first responders in a developing country. Its contributions can be analysed in terms of theory, research, and practice.

The theoretical foundation of the narrative intervention was examined in this research. Cross-cultural evidence has been found for the fundamental mechanisms and psychological processes underpinning traumatic memory, narrative development, PTSD intervention and its related consequences. The effectiveness of Western-validated treatment has been supported in different cultures and populations. However, the findings in the current research encourage further theoretical explanation and examination of the macro-level factors affecting firefighters and first responders who are at risk of developing PTSD.

The study clearly indicates that interventions need to be tailored for different populations and environments. Diversity needs to be taken consideration and a unique perspective applied to the understanding and treatment reaction of different populations in developing countries. In addition, this study has expanded knowledge about evidence-based interventions for traumatic events experienced by firefighters. This can help to identify the most

appropriate intervention to use for particular populations, and the optimal duration of the treatment.

The findings in the qualitative study offer useful information about the background firefighters in Saudi Arabia. This information can help to redress the lack of qualitative research in the clinical psychological field in developing countries such as Arabic countries.

The findings provide useful information for both government and non-government organisations to enable them to provide firefighters and other first responders with regular psychological support to reduce the negative effects of firefighter job.

### ***7.12 Future work***

The results of the current research contribute to the developing body of literature on post-traumatic stress disorders and recovery. However, a number of issues affecting firefighters and other first responders warrant further research attention.

It is recommended that a longitudinal study be used to evaluate first responders such as firefighters from the point at which they are recruited, and with no experiences of traumatic events linked to the job, and following them over time to explore whether PTSD, depression, or anxiety symptoms appear first after a traumatic experience. This might be helpful for providing psychological support early through psychological training of first responders.

Interventions should also be conducted on large and diverse samples to extend the present findings. This might be helpful for extending the use of the intervention to other types of traumatised people and first responders such as police officers and ambulance workers in Saudi Arabia or in any other country.

In the current study, participants received only four sessions each in both the NET and WLC groups. Future study should entail more than four sessions, as is typically conducted with NET. NET sessions should be provided to first responders after the three- and/or six-month follow-up, followed by evaluation. These sessions can be helpful for reducing the stress symptoms associated with their work environment and/or enhancing their coping strategies.

Qualitative studies should be improved in the eastern culture such as Arabic countries in the clinical psychology field in order to improve both the methods and reliability of the outcome results. Such research would need to take into consideration the relevant culture beliefs. This is because cultural beliefs influence preferences for obtaining assistance, whether through mental health services, medical interventions, or from the counsel of family, friends, or religious leaders. In Saudi culture it is believed that prayer, reading of the Holy Qur'an, and participation in religious rituals are central for treating mental health problems. Therefore, this information could provide valuable knowledge about the relevance and portability of interventions across cultures.

The Brief COPE scale was validated for Saudi firefighters in order to contribute to ongoing research with a group of researchers at the University of Nottingham, UK. The results provided a new structure of this scale. This scale will be further developed with a new Saudi population including gender and other demographic variables, by the same group of researchers at the University of Nottingham.

For assessing PTSD symptoms in cross-sectional and intervention studies, both quantitative and qualitative analyses should be applied in order to obtain accurate, in-depth data and information.

### ***7.13 Conclusions***

To conclude, the current research investigates the psychological impact of being a firefighter in Saudi Arabia. The results confirm previous findings regarding the relationship between PTSD symptoms and other variables, namely, depression anxiety, coping strategies, and social support. A qualitative study was conducted in order to explore the background of Saudi firefighters and identify the factors that have affected and led them to become firefighters, with the main aim of assessing the clinical impact of the life story interviews for traumatised firefighters in Saudi Arabia and informing the narrative intervention study. The results of both the qualitative and quantitative studies showed the extent to which Saudi firefighters have been affected by traumatic events and trauma-related psychological disorders. The results also highlighted the coping strategies used and how these coping strategies enhanced as a consequence of the high level of PTSD symptoms.

The coping strategies used included active strategies, such as a reliance on religion and the emotional support of family, and passive strategies, such as alcohol use and avoidance.

Overall, the narrative intervention for traumatised Saudi firefighters was effective. This suggests that NET is well adapted to the cultural background of Saudi firefighters.

The present thesis intended to provide an in-depth understanding of the effectiveness and requirements for the future application of a narrative intervention to first responders such as firefighters, while taking into account their cultural background and living conditions. It is hoped that the dual objectives of this research have been fulfilled: to interest and inform readers about traumatised Saudi firefighters and to lay a solid foundation for further research in this important area.

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## Appendix A: Ethics approval

### Institute of Work, Health & Organisations

<http://www.nottingham.ac.uk/iwho>



The University of  
**Nottingham**

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22/06/2012

Dear Mohammed

#### I-WHO Ethics Committee Review

Thank you for submitting your amendment to your study entitled "Study One: The prevalence of posttraumatic stress symptoms and other psychological disorders among Saudi firefighters. Study Two: Using life story interview for assessing the coherence of firefighters life stories. Study Three: Developing effective Narrative Exposure Therapy interventions for Saudi firefighters". This amendment has now been reviewed by I-WHO's Ethics Committee to the extent that it is described in your submission.

I am happy to tell you the Committee found no problems with your amendments. If there are any further significant changes or developments in the methods, treatment of data or debriefing of participants, then you are obliged to seek further ethical approval for these changes.

We would remind all researchers of their ethical responsibilities to research participants. The Codes of Practice setting out these responsibilities have been published by the British Psychological Society. If you have any concerns whatsoever during the conduct of your research then you should consult those Codes of Practice and contact the Ethics Committee.

Responsibility for compliance with the University Data Protection Policy and Guidance lies with all researchers.

Ethics Committee approval does not alter, replace or remove those responsibilities, nor does it certify that they have been met.

Yours sincerely

**Professor Nadina Lincoln**  
Chair IWHO Ethics Committee

## Appendix B: Informed consent form



### Information and Consent: Study one

**Consent to participant in:** the prevalence of posttraumatic stress symptoms and other psychological disorders among Saudi firefighters.

This is to state that I agree to participate in a program of research being conducted by **Mohammed A Alghamdi**, PhD Student of Institute of Work, Health and Organisations at the University of Nottingham [lwxmaal@nottingham.ac.uk], under supervision of **Dr. Nigel Hunt**. [nigel.hunt@nottingham.ac.uk], **Dr. Shirley Thomas** [shirley.thomas@nottingham.ac.uk].

The study is planned from August 2012 to October 2012 in Saudi Arabia.

#### A. purpose:

I have been informed that the purpose of study one is to examine the prevalence of traumatic events, posttraumatic stress symptoms (PTSS), depression and anxiety symptoms as well as coping strategies, and social support. Comparisons in these variables between age and years of service will be also conducted. Moreover, the variables that predict PTSS will be examined.

#### B. Procedure:

I have been informed that the procedures of the research are selecting between 200 to 300 Saudi firefighters. Then, the participants will respond to the below self-report questionnaire in one session which will take almost one hour. Moreover, data from this study may be published:

- A. Trauma history screen (THS).
- B. Post traumatic stress symptoms (PTSS).
- C. Brief cope.
- D. Depression and anxiety symptoms (HADS).
- E. Social support.

### **C. Risk and benefit**

1. The participation in this study will help develop methods to help the traumatised fire-fighters in Saudi Arabia fire-fighters to deal with traumatic experiences. Moreover, personally, you will have an opportunity to obtain new information about coping with the trauma during the time of responding the brief coping and social support scales.
2. Due to your responses to the questionnaires and participation in the experiment, some distress might be experienced; this is usually temporary; otherwise you can contact the researcher on 0506711105 or mental health centre that agreed to present any psychological consultation on 7466555 number for 24 hours.

### **D. condition of participant**

- I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences and my data will be excluded from the study.
- I understand that my participation in this study is CONFIDENTIAL.
- I understand that the data from this study may be published.
- If at any time you have questions about the proposed research, please contact the investigator at [lwxmaal@nottingham.ac.uk], on mobile number: 07760597319 or the supervisor Nigel Hunt at [[nigel.hunt@nottingham.ac.uk](mailto:nigel.hunt@nottingham.ac.uk)] Tel:01158466484



### Study One Consent

**Consent to participant in:** the prevalence of posttraumatic stress symptoms and other psychological disorders among Saudi firefighters.

**Investigators:** Mohammed Alghamdi, Dr. Nigel Hunt and Dr. Shirley Thomas

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please  
print)

.....

.ADDRESS.....

MOBILE:.....

EMAIL.....

SIGNATURE.....DATE...../...../.....



### **Information and Consent: Study two**

**Consent to participant in:** Using life story interview for assessing the coherence of firefighters life stories.

This is to state that I agree to participate in a program of research being conducted by **Mohammed A Alghamdi**, PhD Student of Institute of Work, Health and Organisations at the University of Nottingham [lwxmaal@nottingham.ac.uk], under supervision of **Dr. Nigel Hunt**. [nigel.hunt@nottingham.ac.uk], **Dr. Shirley Thomas** [shirley.thomas@nottingham.ac.uk].

The study is planned from October 2012 to December 2012 in Saudi Arabia.

#### **A. purpose:**

I have been informed that the purpose of the research is implementation a semi-structured interview to obtain information on the subjective core of each participant's life as well as assessing the coherence of firefighters life stories.

#### **B. Procedure:**

Ten fire-fighters who fit the study's criteria posttraumatic stress symptoms (PTSS) will be asked to take part in the life story interview.

A semi-structured interview schedule will be devised in order to explore the life story and history of the fire-fighters in terms of: life chapters, key scenes in the life story, future scripts, challenges, personal ideology, life themes and indications. This research procedure will take a maximum of 2

hours for each participant. Moreover, the individual interviews will be recorded and transcribed by the researcher, resulting in a flowing narrative that is in the words of the person telling the story.

### **c. Risk and benefit**

1. The narrative can lead to an understanding of the event within the complete life story and makes it more likely that the person will grow from the event.
2. After the interview, some distress might be experienced; this is usually temporary; otherwise you can contact the researcher on 0506711105 or mental health centre that agreed to present any psychological consultation on 7466555 number for 24 hours.

### **D. condition of participant**

- I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences and my data will be excluded from the study.
- I understand that my participation in this study is CONFIDENTIAL.
- I understand that the data from this study may be published.
- If at any time you have questions about the proposed research, please contact the investigator at [lwxmaal@nottingham.ac.uk], on mobile number: 07760597319 or the supervisor Nigel Hunt at [[nigel.hunt@nottingham.ac.uk](mailto:nigel.hunt@nottingham.ac.uk)] Tel:01158466484



### Study Two Consent

**Consent to participant in:** Using life story interview for assessing the coherence of firefighters life stories.

**Investigators:** Mohammed Alghamdi, Dr. Nigel Hunt and Dr. Shirley Thomas

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print)

.....

.ADDRESS.....

MOBILE:.....

EMAIL.....

SIGNATURE.....DATE...../...../.....



### **Information and Consent: Study Three**

**Consent to participant in:** Developing Effective Narrative Exposure Therapy Interventions for Saudi Fire-fighters.

This is to state that I agree to participate in a program of research being conducted by **Mohammed A Alghamdi**, PhD Student of Institute of Work, Health and Organisations at the University of Nottingham [lwxmaal@nottingham.ac.uk], under supervision of **Dr. Nigel Hunt**. [nigel.hunt@nottingham.ac.uk], **Dr. Shirley Thomas** [shirley.thomas@nottingham.ac.uk].

The study is planned from January 2013 to June 2013 in Saudi Arabia.

#### **A. purpose:**

I have been informed that the purpose of the research is to examine the effectiveness of Narrative Exposure Therapy (NET) for Saudi firefighters, and help them to increase positive coping strategies and develop self-control as well as enhance their ability to confront traumatic stress.

#### **B. Procedure:**

The forty participants in this study will be randomly allocated to two groups of 20 each: the NET group and wait-list control group (WLC). The NET group will receive several therapy sessions of 60-90 minutes' duration over a period of 3-4 weeks. These will be administered by the researcher. The WLC group will receive the same treatment but only after a waiting period. Both the NET and the WLC groups will be assessed in terms of PTSD symptoms, depression and anxiety after the NET group treatment (T2), after 3 months (T3) and then at 6 months follow-up (T4).

**C. Risk and benefit**

1. NET allows the client to become habituated to the emotional response to the traumatic memory. Consequently, PTSD symptoms, depression, and anxiety disorders will be reduced. This also will help fire-fighters to enhance positive coping strategies and develop self-control.
2. Due to your responses to the questionnaires and participation in the experiment, some distress might be experienced; this is usually temporary; otherwise you can contact the researcher on 0506711105 or mental health centre that agreed to present any psychological consultation on 7466555 number for 24 hours.

**D. condition of participant**

- I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences and my data will be excluded from the study.
- I understand that my participation in this study is CONFIDENTIAL.
- I understand that the data from this study may be published.
- If at any time you have questions about the proposed research, please contact the investigator at [lwxmaal@nottingham.ac.uk], on mobile number: 07760597319 or the supervisor Nigel Hunt at [[nigel.hunt@nottingham.ac.uk](mailto:nigel.hunt@nottingham.ac.uk)] Tel:01158466484



### Study Three Consent

**Consent to participant in:** Developing Effective Narrative Exposure Therapy Interventions for Saudi Fire-fighters.

**Investigators:** Mohammed Alghamdi, Dr. Nigel Hunt and Dr. Shirley Thomas

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please  
print)

.....

.ADDRESS.....

MOBILE:.....

EMAIL.....

SIGNATURE.....DATE...../...../.....

## Appendix C: Questionnaires

Sex: Male/Female <input type="radio"/> <input type="radio"/>		Education Level: Secondary high school Undergraduate Master PhD Other <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> .....				
Age: .....		Social Status: Single Married widow divorced <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>				
Years of service: .....		Have you ever sought for help from a professional therapy?  YES NO <input type="radio"/> <input type="radio"/>				

### ***Firefighters Trauma History Screen (FTHS)***

This questionnaire is to assess the trauma history. Could you please determine whether you and/or your family members or close friends were exposed to any of these events by putting ( ✓ ) if you have experienced the event? If your answer is YES please answer the other questions about the experienced event?

Events	Myself		My a family member or friend		Did you feel fear, horror, or helplessness?		How many times it has Occurred?
	YES	NO	YES	NO	YES	NO	
1 Transportation accident (e.g., car, boat, train, bicycle, motorbike, )							
2 Serious accident at work, home, or during recreational activity.							
3 Natural disaster (e.g., flood, earthquake )							
4 Hit or kicked hard enough to injure as a child or an adult.							
5 Assault or attempted sexual assault.							
6 Attacked with a gun, knife, or weapon.							
7 Exposed to toxic substance (for example, dangerous chemicals, radiation							
8 During service in the civil defence sector - seeing very violent events.							
9 Seeing someone die suddenly or get badly hurt or killed.							
10 Exposed to serious injury at work.							
11 Life-threatening illness.							
12 Sudden death of close family or friend.							
13 Loss of a home or possessions suddenly as a result of a natural or economic disaster.							
14 Suddenly abandoned by a dear friend or a family member or wife.							
15 Any other very stressful event or experience.							

**Brief COPE**

These items deal with ways you've been coping with the stress in your life since you found out you were going to have to have this operation. There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently? Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true for you as you can.

1 = I haven't been doing this at all, 2 = I've been doing this a little bit, 3 = I've been doing this a medium amount, 4 = I've been doing this a lot

items					
1	I've been taking action to try to make the situation better.	1	2	3	4
2	I've been thinking hard about what steps to take.	1	2	3	4
3	I've been trying to find comfort in my religion or spiritual beliefs.	1	2	3	4
4	I've been praying or meditating.	1	2	3	4
5	I've been trying to get advice or help from other people about	1	2	3	4
6	I've been trying to come up with a strategy about what to do.	1	2	3	4
7	I've been looking for something good in what is happening.	1	2	3	4
8	I've been getting help and advice from other people.	1	2	3	4
9	I've been turning to work or other activities to take my mind	1	2	3	4
10	I've been getting comfort and understanding from someone.	1	2	3	4
11	I've been trying to see it in a different light, to make it seem more positive.	1	2	3	4
12	I've been getting emotional support from others.	1	2	3	4
13	I've been concentrating my efforts on doing something about	1	2	3	4
14	I've been giving up the attempt to cope.	1	2	3	4
15	I've been blaming myself for things that happened.	1	2	3	4
16	I've been giving up trying to deal with it.	1	2	3	4
17	I've been criticizing myself.	1	2	3	4
18	I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	1	2	3	4
19	I've been using alcohol or other drugs to help me get through it.	1	2	3	4

### **Screen for Posttraumatic Stress Symptoms (SPTSS)**

Please answer to these items by fill the box under the alternative which reflects the number of occurring times of these things during the last month. These are no true or false answers, your answer just expresses about your feelings.

*0= Not at all, 1=1 or 2 times, 2= Almost every day, 3=About once every day, 4=More than once every day*

<b>Items</b>						
1	I don't feel like doing things that I used to like doing.	0	1	2	3	4
2	I can't remember much about bad things that have happened to me.	0	1	2	3	4
3	I feel cut off and isolated from other people.	0	1	2	3	4
4	I try not to think about things that remind me of something bad that happened to me.	0	1	2	3	4
5	I feel numb: I don't feel emotions as strongly as I used to.	0	1	2	3	4
6	I have trouble concentrating on things or paying attention to something for a long time.	0	1	2	3	4
7	I have a hard time thinking about the future and believing that I'm going to live to old age.	0	1	2	3	4
8	I feel very irritable and lose my temper.	0	1	2	3	4
9	I avoid doing things or being in situations that might remind me of something terrible that happened to me in the past.	0	1	2	3	4
10	I am very aware of my surroundings and nervous about what's going on around me.	0	1	2	3	4
11	I find myself remembering bad things that happened to me over and over, even when I don't want to think about them.	0	1	2	3	4
12	I get startled or surprised very easily and "jump " when I hear a sudden sound.	0	1	2	3	4
13	I have bad dreams about terrible things that happened to me.	0	1	2	3	4
14	I get very upset when something reminds me of something bad that happened to me.	0	1	2	3	4
15	I have trouble getting to sleep or staying asleep.	0	1	2	3	4
16	When something reminds me of something bad that happened to me, I feel shaky, sweaty, nervous and my heart beats really fast.	0	1	2	3	4
17	I suddenly feel like I am back in the past, in a bad situation that I was once in, and it's like it was happening it all over again.	0	1	2	3	4

### ***The Hospital Anxiety and Depression Scale (HADS)***

Read each item and place a firm tick in the box opposite the reply, which comes closest to how you have been feeling in the past week. Don't take too long over your replies; your immediate reaction to each item will probably be more accurate than a long thought-out response. Tick one box only in each section:

<b>1</b> I feel tense or wound up: Most of the time <input type="checkbox"/> A lot of the time <input type="checkbox"/> Time to time, occasionally <input type="checkbox"/> Not at all <input type="checkbox"/>	<b>8</b> I feel as if I am slowed down: Nearly all the time <input type="checkbox"/> Very often <input type="checkbox"/> Sometimes <input type="checkbox"/> Not at all <input type="checkbox"/>
<b>2</b> I still enjoy the things I used to enjoy: Definitely as much <input type="checkbox"/> Not quite so much <input type="checkbox"/> Only a little <input type="checkbox"/> Hardly at all <input type="checkbox"/>	<b>9</b> I get a sort of frightened feeling like "butterflies" in the stomach: Not at all <input type="checkbox"/> Occasionally <input type="checkbox"/> Quite often <input type="checkbox"/> Very often <input type="checkbox"/>
<b>3</b> I get a sort of frightened feeling as if something awful is about to happen: Very definitely and quite badly <input type="checkbox"/> Yes, but not too badly <input type="checkbox"/> A little, but it doesn't worry me <input type="checkbox"/> Not at all <input type="checkbox"/>	<b>10</b> I have lost interest in my appearance: Definitely <input type="checkbox"/> I don't take so much care as I should <input type="checkbox"/> I may not take quite as much care <input type="checkbox"/> I take just as much care as ever <input type="checkbox"/>
<b>4</b> I can laugh and see the funny side of things: As much as I always could <input type="checkbox"/> Not quite so much now <input type="checkbox"/> Definitely not so much now <input type="checkbox"/> Not at all <input type="checkbox"/>	<b>11</b> I feel restless as if I have to be on the move: Very much indeed <input type="checkbox"/> Quite a lot <input type="checkbox"/> Not very much <input type="checkbox"/> Not at all <input type="checkbox"/>
<b>5</b> Worrying thoughts go through my mind: A great deal of the time <input type="checkbox"/> A lot of the time <input type="checkbox"/> From time to time but not too often <input type="checkbox"/> Only occasionally <input type="checkbox"/>	<b>12</b> I look forward with enjoyment to things: As much as I ever did <input type="checkbox"/> Rather less than I used to <input type="checkbox"/> Definitely less than I used to <input type="checkbox"/> Hardly at all <input type="checkbox"/>
<b>6</b> I feel cheerful Not at all <input type="checkbox"/> Not often <input type="checkbox"/> Sometimes <input type="checkbox"/> Most of the time <input type="checkbox"/>	<b>13</b> I get sudden feelings of panic: Very often indeed <input type="checkbox"/> Quite often <input type="checkbox"/> Not very often <input type="checkbox"/> Not at all <input type="checkbox"/>
<b>7</b> I can sit at ease and feel relaxed: Definitely <input type="checkbox"/> Usually <input type="checkbox"/> Not often <input type="checkbox"/> Not at all <input type="checkbox"/>	<b>14</b> I can enjoy a good book or radio or TV programme: Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Not often <input type="checkbox"/> Very seldom <input type="checkbox"/>

### ***Social Support Scale***

These items deal with social support receive from family, friends, or organisations. Could you please estimate how much you have received social support from these sources: family, friends, and NGO and GO. The first 11 items measure the types of social support: emotional, informational instrumental. The last two items are to measure the satisfaction with the received social support for each source.

*0=Not at all, 1=Little, 3= Moderate, 4= very much*

<b>Items</b>	<b>Family</b>	<b>Friends</b>	<b>NGO &amp; GO</b>
<b>1</b> Helped me to feel better	0 1 2 3	0 1 2 3	0 1 2 3
<b>2</b> Made me feel that I'm really an important person	0 1 2 3	0 1 2 3	0 1 2 3
<b>3</b> Expressed to me that they understand my feelings	0 1 2 3	0 1 2 3	0 1 2 3
<b>4</b> Helped me to deal with the traumatic event	0 1 2 3	0 1 2 3	0 1 2 3
<b>5</b> Provided me information about traumatic events	0 1 2 3	0 1 2 3	0 1 2 3
<b>6</b> Provided me with a place when I needed it	0 1 2 3	0 1 2 3	0 1 2 3
<b>7</b> Helped to accept the incident as an accident	0 1 2 3	0 1 2 3	0 1 2 3
<b>8</b> Talked with me about the decisions that I made about the incident	0 1 2 3	0 1 2 3	0 1 2 3
<b>9</b> Said things that helped me to understand the trauma	0 1 2 3	0 1 2 3	0 1 2 3
<b>10</b> Encouraged me to be in touch with others	0 1 2 3	0 1 2 3	0 1 2 3
<b>11</b> Let me know that they will be around if I need assistance	0 1 2 3	0 1 2 3	0 1 2 3
<b>12</b> I feel satisfied about the support that I have received	0 1 2 3	0 1 2 3	0 1 2 3
<b>13</b> I feel that the support that I have received was helpful	0 1 2 3	0 1 2 3	0 1 2 3

## Appendix D: Life Story Interview

### Life Story Interview (LSI)

This is an interview about the *story of your life*. As a social scientist, I am interested in hearing your story, including parts of the past as you remember them and the future as you imagine it. The story is selective; it does not include everything that has ever happened to you. Instead, I will ask you to focus on a few key things in your life – a few key scenes, characters, and ideas. There are no right or wrong answers to my questions. Instead, your task is simply to tell me about some of the most important things that have happened in your life and how you imagine your life developing in the future. I will guide you through the interview so that we finish it all in about two hours or less. Please know that my purpose in doing this interview is not to figure out what is wrong with you or to do some kind of deep clinical analysis! Nor should you think of this interview as a “therapy session” of some kind. The interview is for research purposes only, and its main goal is simply to hear your story. Everything you say is voluntary, anonymous, and confidential.

I think you will enjoy the interview. Do you have any questions?

Elements	Questions
<p><b>Life chapters</b></p>	<p>Please begin by thinking about your life as if it were a book or novel. Imagine that the book has a table of contents containing the titles of the main chapters in the story. To begin here:</p> <ol style="list-style-type: none"> <li>1. Please describe very briefly what the main chapters in your life might be?</li> <li>2. Please give each chapter a title, tell me just a little bit about what each chapter is about?</li> <li>3. Please say a word or two about how we get from one</li> </ol>

	<p>chapter to the next?</p> <p>4. What you want to do is to give me an overall plot summary of your story, going chapter by chapter?</p>
<p><b>Key Scenes in the Life Story</b></p>	<p><b>High point:</b></p> <ol style="list-style-type: none"> <li>1. Please describe this high point scene in detail. What happened, when and where, who was involved, and what were you thinking and feeling?</li> <li>2. Please say a word or two about why you think this particular moment was so good?</li> </ol> <p><b>Low point:</b></p> <ol style="list-style-type: none"> <li>1. Please identify a scene that stands out as a low point?</li> <li>2. What happened in the event, where and when, who was involved, and what were you thinking and feeling?</li> <li>3. Please say a word or two about why you think this particular moment was so bad?</li> </ol> <p><b>Turning point:</b></p> <ol style="list-style-type: none"> <li>1. Please identify a particular episode in your life story that you now see as a turning point in your life?</li> <li>2. If you cannot identify a key turning point that stands out clearly, please describe some event in your life wherein you went through an important change of some kind?</li> <li>3. Please describe what happened, where and when, who was involved, and what you were thinking and feeling?</li> <li>4. Please say a word or two about what you think this event says about you as a person or about your life?</li> </ol> <p><b>Positive childhood memory:</b></p>

	<ol style="list-style-type: none"> <li>1. Please describe this good memory in detail. What happened, where and when, who was involved, and what were you thinking and feeling?</li> <li>2. What does this memory say about you or about your life?</li> </ol> <p><b>Negative childhood memory:</b></p> <ol style="list-style-type: none"> <li>1. Please describe this bad memory in detail. What happened, where and when, who was involved, and what were you thinking and feeling?</li> <li>2. What does this memory say about you or your life?</li> </ol> <p><b>Vivid adult memory:</b></p> <ol style="list-style-type: none"> <li>1. Please describe this scene in detail, tell what happened, when and where, who was involved, and what you were thinking and feeling?</li> <li>2. What does this memory say about you or your life?</li> </ol> <p><b>Wisdom event:</b></p> <ol style="list-style-type: none"> <li>1. Please describe an event in your life in which you displayed wisdom?</li> <li>2. What happened, where and when, who was involved, and what were you thinking and feeling?</li> <li>3. What does this memory say about you and your life?</li> </ol>
<p><b>Future Script</b></p>	<p><b>The next chapter:</b></p> <ol style="list-style-type: none"> <li>1. Please describe what you see to be the next chapter in your life. What is going to come next in your life story?</li> </ol> <p><b>Dreams, hopes, and plans for the future:</b></p> <ol style="list-style-type: none"> <li>1. Please describe your plans, dreams, or hopes for the future?</li> <li>2. What do you hope to accomplish in the future in your</li> </ol>

	<p>life story?</p> <p><b>Life project:</b></p> <ol style="list-style-type: none"> <li>1. Please describe any project that you are currently working on or plan to work on in the future. Tell me what the project is?</li> <li>2. How you got involved in the project or will get involved in the project?</li> <li>3. How the project might develop?</li> <li>4. Why you think this project is important for you and/or for other people.</li> </ol>
<p><b>Challenges</b></p>	<p><b>Life challenge:</b></p> <ol style="list-style-type: none"> <li>1. What is or was the challenge or problem? How did the challenge or problem develop?</li> <li>2. How did you address or deal with this challenge or problem?</li> <li>3. What is the significance of this challenge or problem in your own life story?</li> </ol> <p><b>Health:</b></p> <ol style="list-style-type: none"> <li>1. Please describe in detail what the health problem is or was and how it developed. If relevant, please discuss any experience you had with the health-care system regarding this crisis or problem?</li> <li>2. Please talk about how you coped with the problem and what impact this health crisis, problem, or challenge has had on you and your overall life story?</li> </ol> <p><b>Loss:</b></p> <ol style="list-style-type: none"> <li>1. Please identify and describe the greatest interpersonal loss you have experienced?</li> <li>2. Please describe this loss and the process of the How</li> </ol>

	<p>have you coped with the loss?</p> <p>3. What effect has this loss had on and your life story?</p> <p><b>Failure, regret:</b></p> <ol style="list-style-type: none"> <li>1. Please identify and describe the greatest failure or regret you have experienced. The failure or regret can occur in any area of your life – work, family, friendships, or any other area?</li> <li>2. Please describe the failure or regret and the way in which the failure or regret came to be?</li> <li>3. How have you coped with this failure or regret?</li> <li>4. What effect has this failure or regret had on you and your life story?</li> </ol>
<p><b>Personal Ideology</b></p>	<p><b>Religious/ethical values</b></p> <ol style="list-style-type: none"> <li>1. Please describe in a nutshell your religious beliefs and values, if indeed these are important to you?</li> <li>2. Please describe your overall ethical or moral approach to life?</li> </ol> <p><b>Political/social values:</b></p> <ol style="list-style-type: none"> <li>1. How do you approach system or social issues?</li> <li>2. Do you have a particular system point of view?</li> <li>3. Are there particular social issues or causes about which you feel strongly? Please explain?</li> </ol> <p><b>Change, development of religious and political views</b></p> <ol style="list-style-type: none"> <li>1. Please tell the story of how your religious, moral, and/or system views and values have developed over time. Have they changed in any important ways? Please explain?</li> </ol> <p><b>Single value:</b></p> <ol style="list-style-type: none"> <li>1. What is the most important value in human living?</li> </ol>

	Please explain?
<b>Life Theme</b>	<p>Looking back over your entire life story with all its chapters, scenes, and challenges, and extending back into the past and ahead into the future:</p> <ol style="list-style-type: none"> <li>1. Do you discern a central theme, message, or idea that runs throughout the story?</li> <li>2. What is the major theme in your life story? Please explain.</li> </ol>
<b>Reflection</b>	<p>Thank you for this interview. I have just one more question for you. Many of the stories you have told me are about experiences that stand out from the day-to-day. For we talked about a high point, a turning point, a scene about your health, etc. Given that most people don't share their life stories in this way on a regular basis.</p> <ol style="list-style-type: none"> <li>1. I'm wondering if you might reflect for one last moment about what this interview, here today, has been like for you?</li> <li>2. What were your thoughts and feelings during the interview?</li> <li>3. How do you think this interview has affected you?</li> </ol>

## Appendix E : Narrative Exposure Therapy (NET) training

East London   
NHS Foundation Trust

Date: 21<sup>th</sup> November 2012

Institute of Psychotrauma  
Dean Cross  
16 Dean Cross Street  
London  
E1 2QA

Re: Mohammed Al-Ghamdi

Tel: 020 7791 7630  
Fax: 020 7791 7601

To Whom it may concern,

I would like to confirm the attendance of Mr Al-Ghamdi to the Narrative Exposure Therapy course here at the Institute of Psychotrauma. Mr Al-Ghamdi attended both training days on the 8<sup>th</sup> and 9<sup>th</sup> of October 2012. The full cost of this course was £175.00.

Yours Sincerely,



Katy Robjant

Clinical Psychologist

Adding to the training course above, the research attended group training at the division of psychiatry and Applied psychology at the University of Nottingham under Dr. Nigel Hunt supervision. This group included all the PhD students who had NET training and interested in this type of therapy. More than five sessions were applied with feedback and developing skills of using this technique. This training allowed the researcher to practice NET as a therapist to client, and observation which improved the ability considerably.

In the time of NET study, the researcher supervised by a clinical psychologist - Dr Ali AL-Zahrani. This supervision was in general for the study application only. Because NET is a new technique was applied in Saudi Arabia, the researcher delivered this technique without expert NET therapist supervision.

With regard to the number of NET session, there were time constraints for travelling and conducting the research. The researcher provided the narrative treatment to both groups due to the non-psychological trauma care used by this technique in Saudi Arabia and the limited time was available to conduct the RCT. In addition, Four NET sessions have been found to be effective in treating PTSD and depression in several studies with different populations, including: Rwandan and Somali refugees (Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004) , Rwandan orphans (Schaal, Elbert, & Neuner, 2009), former political prisoners (Bichescu, Neuner, Schauer, & Elbert, 2007), earthquake survivors (Zang, Hunt, & Cox, 2013). Therefore, it was decided to deliver four NET sessions as most the previous RCT studies used a few number of sessions.